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A revision of the TRIPLECTIDINAE, a subfamily of the LEPTOCERIDAE (Trichoptera). By MARTIN E. MOSELY . . . . pp. 91–130

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A REVISION OF THE TRIPLECTIDINAE, A SUBFAMILY OF THE LEPTOCERIDAE (TRICHOPTERA)

By Martin E. Mosely.

[Read 20th November, 1935.]

With Ninety-eight Text-figures.

Genitalia in the Trichoptera have gradually taken the leading position as affording characters for separating genera and species. No doubt this is generally satisfactory, yet on occasions we find that a similarity in the pattern of the genitalia which would justify grouping various species into one and the same genus is not supported by a corresponding similarity in neuration and *vice versa*.

The ideal when considering the distinctions in generic characters is to find major variations in neuration supported by variations of equal value in the genitalia, but alas ! in practice this is not always the case.

To a certain extent, this is the position with the Triplectidinae. No one could admit, having regard to neuration, such forms as *Symphitoneuria exigua* and, say, *Triplectides obsoleta* as being congeneric, and yet, if genitalia alone were to be considered, variation is certainly insufficient for a generic separation to be quite satisfactory.

After a certain amount of hesitation, I have decided to revise the Triplectidinae almost entirely on characters afforded by neuration, being partly influenced by the fact that the preliminary separation of pinned and dried examples could thereby be effected with little or no difficulty.

The table will show that, unless some of the examples before me are aberrant in neuration, the various new genera here erected are easily separable. Variation in spurs has been disregarded as not of generic importance.

The genus *Notanatolica*, separated by McLachlan from *Triplectides* on the variation in the spur formula, thus falls into synonymy.

It is probable that numerous species have been ascribed by various authors to *Notanatolica* (now *Triplectides*) on colour variation alone. This distinction I have disregarded, and I suspect that many of these species are merely forms of *magna*, *cephalotes* and *gilolensis*. Having regard to a slight variation in genitalia that occurs amongst the numerous Walker co-types of *magna*, it may be that *cephalotes* should be merged in this species. I am satisfied, however, that *gilolensis* is distinct.

I have placed the new Tasmanian genus *Atriplectides*, genotype *dubia*, in this subfamily rather doubtfully. The spur formula is 2, 4, 4, and the genitalia and neuration both differ considerably from those of other genera in the Triplectidinae. It may be that the genus might be more happily placed amongst the Odontoceridae, but this would entail an alteration or extension of the characters of that family which would weaken its position.

Ulmer in his great work on Fossil Trichoptera in amber describes three species of *Triplectides*. I do not, however, propose to deal with fossil forms in this Revision.

Triplectidinae Ulmer.

Triplectidinae Ulmer, 1906, *Notes Leyden Mus.*, **28** : 105.
Ulmer, 1907, *Coll. Selys*, **6** (1) : 41–2.
Ulmer, 1907, *Gen. Insect.*, **60a** : 129.

Insects medium-sized or large; antennae very long and slender; maxillary palpi five-jointed, long and hairy, terminal joint flexible but not articulated; ocelli absent; anterior wings long and narrow covered with dense pubescence, neuration sometimes irregular, posterior wing broad with the lower margin generally slightly excised at about the fourth anal vein, basal part of the wing generally dilated. Median cell in the anterior wings absent; discoidal cell in both wings present; in the anterior wing, forks nos. 1 and 5 present in the ♂, 1, 3 and 5 in the ♀, though in the genus *Atriplectides* fork no. 3 is doubtful; in the posterior wings the forks are nos. 1, 3 and 5, or 3 and 5, or 5 only.

Spurs 0, 2, 2 or 2, 2, 2 or 2, 2, 3 or 2, 2, 4 or 2, 4, 4.

Table of Genera.

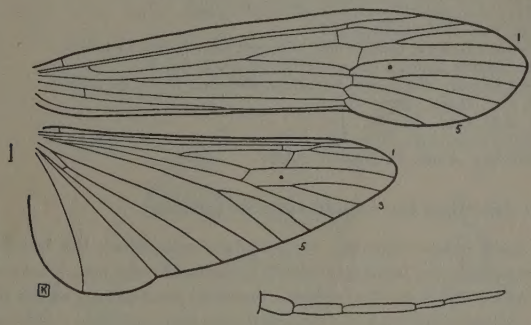
1. In the posterior wing, fork no. 1 present . . . . . 2.
–. In the posterior wing, fork no. 1 absent . . . . . 4.
2. Discoidal cell of the anterior wing with the lower distal angle produced downwards. . . . . *Triplectides* Kol., p. 92.
–. Discoidal cell of the anterior wing normal . . . . . 3.
3. Part of the lower border of the discoidal cell together with the corresponding portion of the nervure beneath, noticeably thickened *Triplectidina* gen. n., p. 107.
–. Nervure of the discoidal cell and the nervure beneath normal *Hudsonema* gen. n., p 110.
4. In the anterior wing, fork no. 1 with a footstalk . . *Notalina* gen. n., p. 114.
–. In the anterior wing, fork no. 1 sessile . . . . . 5.
5. In the anterior wing, lower margin of the discoidal cell thickened and neuration beneath it irregular . . . . *Symphitoneuria* Ulmer, p. 117.
–. In the anterior wing, discoidal cell and neuration normal . . . . . 6.
6. In the anterior wing, discoidal cell much shorter than its footstalk; spurs 2, 4, 4 . . . . . (Tasmania) *Atriplectides* gen. n., p. 119.
–. In the anterior wing, discoidal cell as long as or longer than its footstalk; spurs 0, 2, 2 or 2, 2, 2 . . . . . 7.
7. In the posterior wing cell below fork no. 3 reaches the cross-vein; spurs 2, 2, 2 *Loticana* gen. n., p. 121.
–. Cell below fork no. 3 does not reach the cross-vein; spurs 0, 2, 2 *Atanatolica* gen. n., p. 123.

Triplectides Kolenati (figs. 1–2).

Triplectides Kolenati, 1859, *Gen. et spec. Trich.*, **2** : 247–8.
Ulmer, 1905, *Ann. nat. Hist. Hofmus. Wien*, **20** : 71–2.
Ulmer, 1905, *Stettin. ent. Ztg.*, **66** : 29.
Ulmer, 1907, *Gen. Insect.*, **60a** : 131.
Tillyard, 1924, *Trans. N.Z. Inst.*, **55** : 306.
Tetracentron Brauer, 1865, *Verh. zool.-bot. Ges. Wien*, **15** : 418.
Brauer, 1866, *Novara Reise, Neuroptera*, : 11–12.
Pseudonema McLachlan, 1862, *Trans. ent. Soc. Lond.*, (3) **1** : 305.
McLachlan, 1868, *J. linn. Soc. Lond.* (Zool.), **10** : 212.
McLachlan, 1871, *J. linn. Soc. Lond.* (Zool.), **11** : 128.
Hutton, 1899, *Trans. N.Z. Inst.*, **31** : 240.
Hudson, 1904, *N. Zealand Neuropt.*, : 72.
Ulmer, 1905, *Ann. nat. Hist. Hofmus. Wien*, **20** : 71–2.

Notanatolica McLachlan, 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 256–7.
Hutton, 1899, *Trans. N.Z. Inst.*, **31** : 241.
Hudson, 1904, *N. Zealand Neuropt.*, : 76.
Ulmer, 1905, *Ann. nat. Hist. Hofmus. Wien*, **20** : 71–2.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–5.
Ulmer, 1907, *Gen. Insect.*, **60a** : 130.
Tillyard, 1924, *Trans. N.Z. Inst.*, **55** : 306.

In the anterior wing the discoidal cell is long with the lower distal angle produced towards the posterior margin; forks nos. 1 and 5 present in the ♂, nos. 1, 3 and 5 in the ♀; posterior wing dilated in the posterior area towards the base; forks nos. 1, 3 and 5 present in both wings; no. 1 with a footstalk.



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FIGS. 1–2.—*Triplectides gracilis* Burm. ♂; 1. wings; 2. *Triplectides magna* Walker ♂; maxillary palpus.

In the male genitalia, there is always a pair of superior appendages of varying length, a large upper penis-cover with generally an excised apex and well-developed inferior appendages always branched, the second branch generally claw-shaped. Spurs 2, 2, 2 or 2, 2, 3 or 2, 2, 4.

Genotype, *Mystacides gracilis* Burmeister.

Table of Species.

1. Inferior appendages with four well-developed branches . . . . . 2.
–. Inferior appendages with three well-developed branches . . . . . 4.
2. Margin of the upper penis-cover excised . . . . . 3.
–. Margin of the upper penis-cover entire . (New Zealand) *obsoleta* McL., p. 94.
3. Margin of the ninth segment much produced, apex acute; upper penis-cover deeply excised beyond midway; anterior wings yellowish (S. America) *gracilis* Burm., p. 96.
–. Margin of the ninth segment only slightly produced, apex truncate; upper penis-cover excised only towards the apex; wings dark greyish (S. America) *nigripennis* sp. n., p. 97.
4. Spurs 2, 2, 3 . . . . . (New Hebrides) *latipennis* sp. n., p. 98.
–. Spurs 2, 2, 2 . . . . . 5.
5. Margin of the ninth segment strongly produced, triangular . . . . . 6.
–. Margin of the ninth segment not so produced, truncate or excised (India, Australasia, etc.) *magna* Walker, p. 100.
6. Ninth segment with the lateral margins of the strongly produced centre, concave . . . . . (Ceylon) *ceylanicum* sp. n., p. 103.

–. Lateral margins somewhat convex . . . . . 7.
7. Discoidal cell of the anterior wing shorter than its footstalk
cephalotes Walker, p. 104.
–. Discoidal cell of the anterior wing longer than its footstalk *
(India, Australasia, etc.) *gilolensis* McL., p. 104.

Triplectides obsoleta McLach. (figs. 3–7).

Pseudonema obsoleta McLachlan, 1862, *Trans. ent. Soc. Lond.*, (3) **1** : 305–6.
Hagen, 1864, *Verh. zool.-bot. Ges. Wien*, **14** : 876.
Pseudonema obsoletum McLachlan, 1868, *J. linn. Soc. Lond.* (Zool.), **10** : 212.
Pseudonema obsoleta Hutton, 1899, *Trans. N.Z. Inst.*, **31** : 240–1.
Hudson, 1904, *N. Zealand Neuropt.*, : 72–5, pl. x, figs. 1–7.
Phillips, 1929, *N.Z. Fish. Bull.*, **2** : 12.
Tetracentron sarthropus Brauer, 1865, *Verh. zool.-bot. Ges. Wien*, **15** : 418.
Brauer, 1866, *Novara Reise, Neuropt.*, : 12–14, pl. 1, fig. 5.
Triplectides obsoleta Ulmer, 1905, *Ann. nat. Hist. Hofmus. Wien*, **20** : 71–2.
Ulmer, 1907, *Gen. Insect.*, **60a** : 131.
Ulmer, 1916, *Ark. Zool.*, **10** (13) : 17.
Tillyard, 1924, *Trans. N.Z. Inst.*, **55** : 307.
Tillyard, 1926, *Ins. Austr. N. Zealand* : 392.

McLachlan describes the female type as follows :—

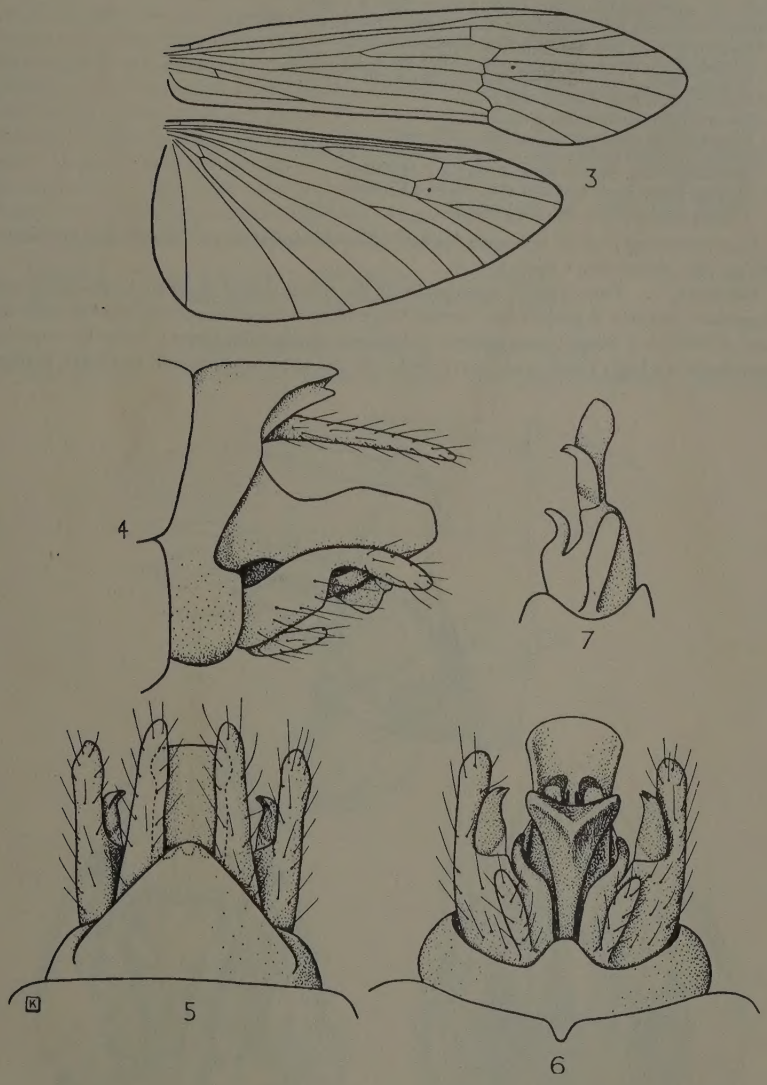
"Antennae much longer than the wings, joints cylindrical, the basal joint long and thick; maxillary palpi hairy, basal joint short, second and third long, of equal length, fourth scarcely so long as the third and less robust; terminal joint as long as the third and fourth united, flexible; labial palpi with the terminal joint long and thin; head sub-triangular; eyes prominent [greenish, M.E.M.]; abdomen robust; legs, spurs 2, 2, 3 [subsequently shown to be 2, 2, 4, M.E.M.]; anterior wings rather thickly clothed with short hairs, long, narrow, slightly dilated at the apex which is elongate; discoidal cell broad; first apical cell much longer than the rest; second short, scarcely reaching half-way to the anastomosis, fifth narrow and very acute, barely reaching the anastomosis; posterior wings folded."

To this I add the following description of the male genitalia.

Genitalia, ♂. Margin of the ninth dorsal segment produced in a triangular plate with an acute apex; there are two small processes set close together under the apex of this plate but only visible in a balsam preparation; superior appendages arise from beneath the dorsal plate, rather stout and long, slightly longer than the upper penis-cover which, from above, has a truncate apex and, from the side, a rounded excision on its upper margin towards the base; penis slender at its base, broadening gradually to a cup-like apex in which are set two rather broad nodules with two black upwardly pointing hooks between; from beneath, there is a wide V-shaped ridge extending across and slightly behind the lower apical margin; inferior appendages four-branched, the main branch is deeply angulated along its inner margin at a point rather more than midway towards the apex; in the angle is set a short and rather wide second branch with a strongly chitinised, bifurcate, claw-shaped apex; the third branch arises from the inner margin of the appendage towards the base and is broad at its base, sinuous, curving towards the penis; the fourth branch arises from the lower basal margin of the appendage, as seen from beneath; it is short, fringed and extends to the base of the second fork; margin of the ninth ventral segment is produced at its centre in a rather wide triangular process; ventral margin of the eighth segment sharply excised at its centre.

New Zealand. Type ♀ in the Dale collection, Oxford University.

* Excepting in the Indian example described by Betten in 1909.



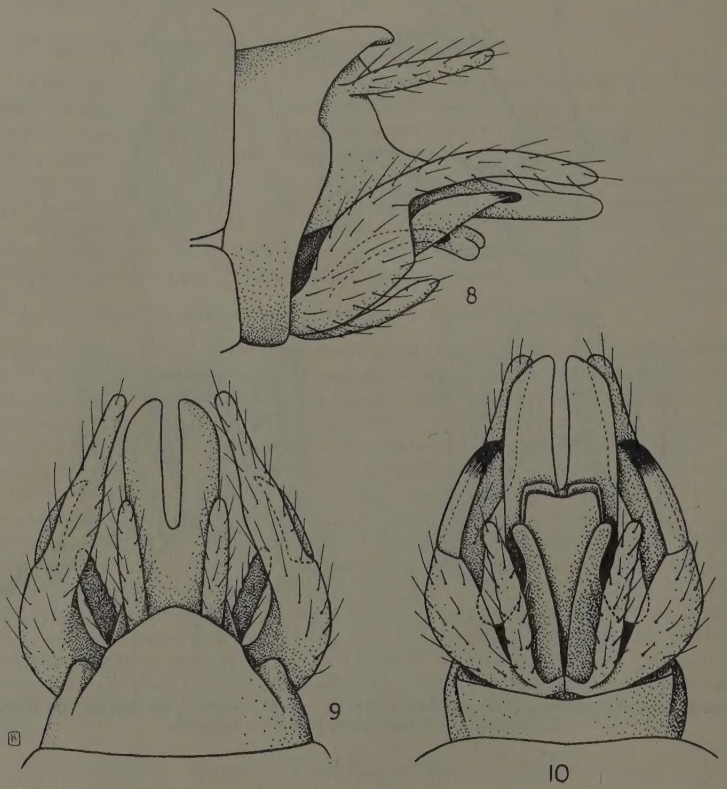
FIGS. 3–7.—*Triplectides obsoleta* McLach. ♂; 3. wings, 4. genitalia lateral, 5. dorsal, 6. ventral, 7. inferior appendage from beneath.

Triplectides gracilis Burmeister (figs. 1 and 8–10).

Mystacides gracilis Burmeister, 1839, *Handb. Ent.*, **2** : 921.
Triplectides gracilis Kolenati, 1859, *Gen. et Spec. Trich.*, **2** : 180, 248.
Hagen, 1864, *Verh. zool.-bot. Ges. Wien*, **14** : 890.
Ulmer, 1905, *Stettin. ent. Ztg.*, **66** : 27–9, pl. 1, figs. 23–5.
Ulmer, 1905, *Ann. nat. Hist. Hofmus. Wien*, **20** : 71–2.
Ulmer, 1907, *Gen. Insect.*, **60a** : 131.
Ulmer, 1907, *Coll. Selys*, **6** (1) : 41.
Ulmer, 1913, *Deuts. ent. Z.*, **1913** : 402, 412.
Mystacides princeps Burmeister, 1839, *Handb. Ent.*, **2** : 921.
Kolenati, 1859, *Gen. et Spec. Trich.*, **2** : 189, 248.
Hagen, 1864, *Verh. zool.-bot. Ges. Wien*, **14** : 890.
Ulmer, 1905, *Stettin. ent. Ztg.*, **66** : 27.

Insects varying in size; antennae fuscous with paler annulations; wings long and narrow with greyish pubescence : spurs 2, 2, 4.

Genitalia, ♂. From above, the margin of the ninth dorsal segment is produced and triangular; beneath it project two slender finger-shaped superior appendages between the bases of which is a minute membranous process not visible from above; below the superior appendages is a large upper penis-cover cleft from the apex to about half its length to form



FIGS. 8–10.—*Triplectides gracilis* Burm. ♂; 8. genitalia lateral, 9. dorsal, 10. ventral.

two forks each with an obliquely truncate apex; below this is the penis, visible only from beneath and of about half the length of the upper cover and also cleft at the centre of its apical margin; the lower penis-cover is slightly shorter than the penis with the apical margin entire, the inferior appendages are each four-branched, the upper branches long and finger-shaped, extending as far as the apex of the upper penis-cover; from their under surfaces at points midway arise the second branches, rather more strongly chitinised and terminating in strong inturned claws; the third branches are still more strongly chitinised and arise at the bases of the appendages and between them; from beneath, they are broad at their bases and diverge on each side of the slightly longer lower penis-cover, apices rounded; there is the usual pair of slender finger-like ventral branches arising at the bases of the inferior appendages and slightly longer than the third or inner branches.

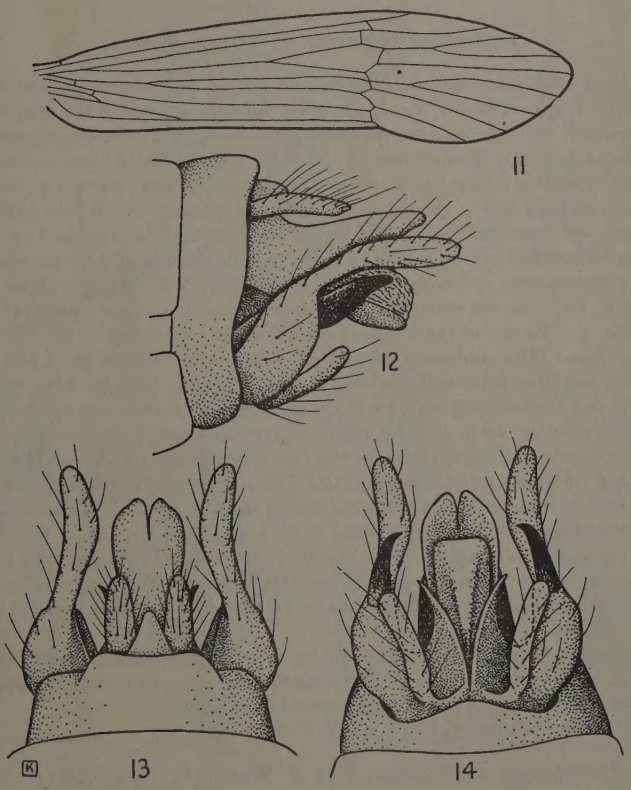
Length of anterior wing, ♂, 11–17 mm.

BRAZIL; CHILE; PANAMA; ARGENTINE; GUATEMALA.

Type ♂ in the Zoological Institute of Halle University.

Triplectides nigripennis sp. n. (figs. 11–14).

Head fuscous; palpi fuscous; antennae fuscous, basal joint ochraceous; legs closely



FIGS. 11–14.—*Triplectides nigripennis* sp. n. ♂; 11. anterior wing, 12. genitalia lateral, 13. dorsal, 14. ventral.

covered with short silvery hairs; anterior wing long and narrow, very acute at the apex, clothed with nearly black hairs and with numerous whitish irrorations. Spurs 2, 2, 4.

Genitalia, ♂. Dorsal margin of the ninth segment truncate with a triangular membranous projection beyond its centre; on each side of this projection arise the superior appendages which are short and rather broad; upper penis-cover nearly twice the length of the superior appendages, apex very narrowly excised to make two lobes with obliquely truncate apices; penis rather shorter than its cover; inferior appendages four-branched, the main upper branch sharply angulated beneath as is usual, to take a short second branch with inturned blackened apex; the third branches are seen edgeways from beneath, one on each side of the penis, with acute divergent apices; fourth branches from beneath, arise at the bases of the appendages and extend to the bases of the second branches.

Length of anterior wing, ♂, 16 mm.; ♀, 12–15 mm.

Argentina: Terr. Rio Negro, Bariloche, 28.xi–1.xii.1926 (*F. and M. Edwards*); Terr. Rio Negro, L. Correntoso, 18–25.xi.1926 (*F. and M. E.*); S. Chile: Chiloe Isl., Puntra, 19.xii.1926 (*F. and M. E.*).

Type ♂ (Argentina: Bariloche) with the abdomen mounted in balsam, two paratypes ♀♀ in the British Museum collection.

Triplectides latipennis sp. n. (figs. 15–22).

Head light ochraceous clothed with cream-coloured pubescence amongst which are interspersed a few black hairs; basal joint of the antennae clothed above with a patch of fulvous bordered with cream-coloured hairs, particularly at the apex, remaining joints fulvous, annulated with cream-colour in the basal quarter length, the annulations disappearing or becoming scarcely noticeable in the remainder; palpi ochraceous clothed with short cream-coloured hairs; thorax and metathorax ochraceous. Wings, anterior light fulvous irrorated with pale yellow, the yellow spots tending to coalesce to make small blotches in the costal area and vertical lines in the central area of the wing and towards the disc; posterior wing uniformly pale fuscous, an additional fork in the upper branch of the media in the ♀ in the anterior wings. Legs ochraceous, spurs apparently 2, 2, 3.

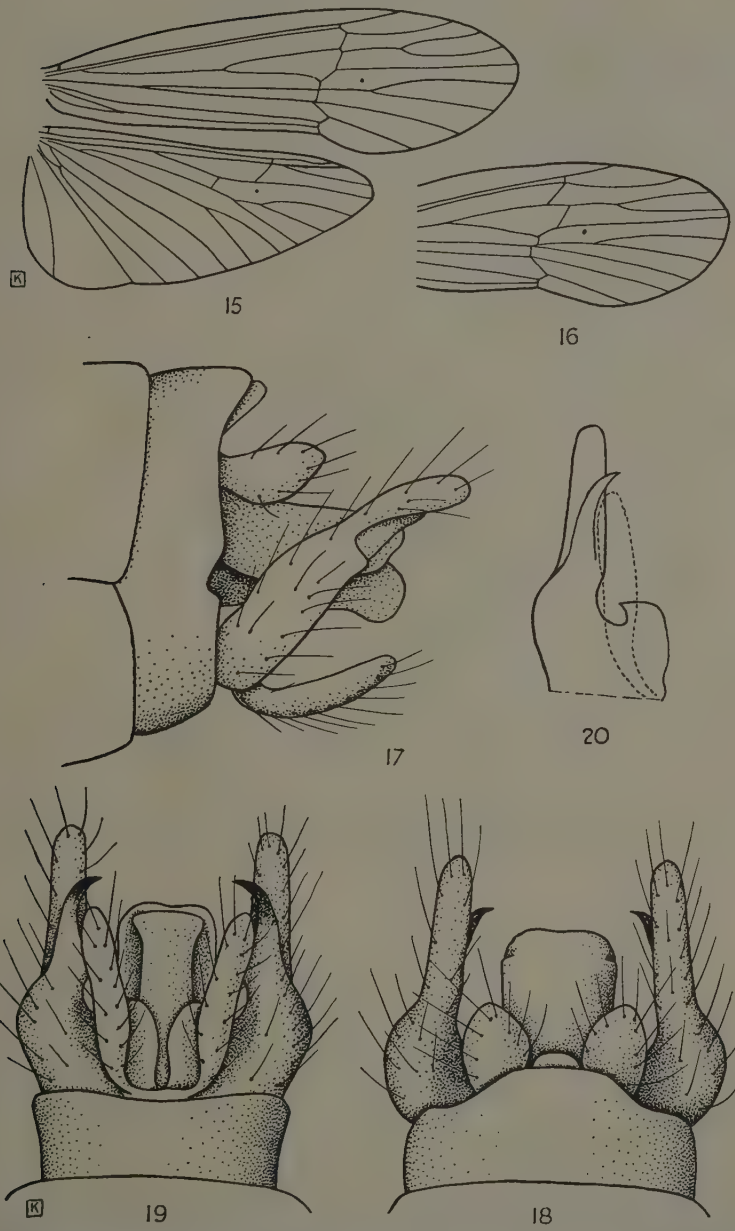
Genitalia, ♂. Margin of the terminal dorsal segment produced at the centre with a very small dorsal plate projecting beyond it; superior appendages short and rounded, fringed with long stout hairs, with the bases constricted as seen from the side; upper penis-cover broad and hood-shaped, carrying a pair of triangular warts on its upper surface and closely enveloping the penis on three sides; inferior appendage consists of a long main branch with a rectangular notch midway along its under surface; at the angle thus formed is jointed a short branch terminating in a hook-like and strongly chitinised incurved apex; the main branch tends to become membranous at its apex where it carries a few widely scattered long hairs; at the extreme base of the appendages is a pair of long finger-like processes curving upward as seen from the side, lower surfaces fringed with long hairs; at the base of each appendage, seen from beneath, and inside the finger-like process, is a broad plate the apex of which is excised so that a hook-like process is formed at its inner angle.

Genitalia, ♀. From above, the margin of the terminal dorsal segment is strongly produced at its centre; there are two short fringed dorsal appendages and two short ventral appendages, triangular from the side and rounded from beneath.

Length of anterior wing, ♂, 11·5 mm.; ♀, 10 mm.

New Hebrides: Erromanga, Man o' War, N.C., 1.ix.1930 (*L. E. Cheesman*), B.M. 1930, 496.

Type ♂ and paratype ♀ in the collection of the British Museum.



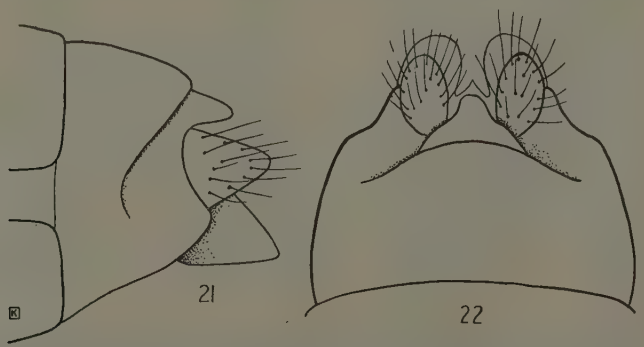
FIGS. 15–20.—*Triplectides latipennis* sp. n.; 15. wings ♂, 16. apex of anterior wing ♀, 17. genitalia ♂ lateral, 18. dorsal, 19. ventral, 20. inferior appendages from beneath.

Triplectides magna Walker (figs. 2 and 23–35).

Leptocerus magnus Walker, 1852, *Cat. Neuropt. Brit. Mus.*, : 73.
McLachlan, 1862, *Trans. ent. Soc. Lond.*, (3) **1** : 307.
Notanatolica magna McLachlan, 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 257, pl. xix, figs. 3*a–e*.
McLachlan, 1868, *J. linn. Soc. Lond.* (Zool.), **10** : 212.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–5.
Ulmer, 1907, *Cat. Coll. Selys.*, **6** (1) : 41.
Ulmer, 1907, *Gen. Insect.*, **60a** : 130.
Ulmer, 1908, *Deuts. ent. Z.*, **1908** : 344.
Ulmer, 1908, *Michaelsen-Hartmeyer Fauna S.W. Austr.*, **2** (3) : 30–1.
Ulmer, 1911, *Deuts. ent. Z.*, **1911** : 400.
Ulmer, 1913, *Ent. Mitt.*, **2** : 49.
Ulmer, 1916, *Ark. Zool.*, **10** (13) : 18.
Ulmer, 1925, *Arch. Naturges.*, **91** (A) 5 : 64.
Ulmer, 1930, *Treubia*, **11** : 403–4.
Ulmer, 1932–3, *Pekin nat. Hist. Bull.*, **7** : 55, 149.
Betten, 1909, *Rec. Ind. Mus.*, **3** : 239.
Banks, 1913, *Proc. ent. Soc. Wash.*, **15** : 176.
Banks, 1916, *Phillip. J. Sci.*, **11** : 213.
Tillyard, 1925, *Rec. S. Austr. Mus.*, **3** : 44.
Tillyard, 1926, *Ins. Austr. N. Zealand* : 393, fig. Y11.
Martynov, 1930, *Proc. zool. Soc. Lond.*, **1930** : 110.
Leptocerus canescens McLachlan, 1862, *Trans. ent. Soc. Lond.*, (3) **1** : 306–7.
McLachlan, 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 257.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 33.
Ulmer, 1907, *Gen. Insect.*, **60a** : 130.
Leptocerus cognatus McLachlan, 1862, *Trans. ent. Soc. Lond.*, (3) **1** : 306.
Notanatolica cognata McLachlan, 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 257–8.
McLachlan, 1868, *J. linn. Soc. Lond.* (Zool.), **10** : 212, pl. 2, fig. 6.
Hutton, 1899, *Trans. N.Z. Inst.*, **31** : 241.
Hudson, 1904, *N.Z. Neuropt.*, : 77.
Ulmer, 1905, *Ann. nat. Hist. Hofmus. Wien*, **20** : 71.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–4.
Ulmer, 1907, *Gen. Insect.*, **60a** : 130.
Tillyard, 1926, *Ins. Austr. N. Zealand* : 393.
Notanatolica legendrina Navás, 1923, *Rev. Ac. Cienc. Zaragosa* **7** : 50.
Ulmer, 1925, *Arch. Naturges.*, **91** (A) 5 : 64.
Ulmer, 1932–3, *Pekin nat. Hist. Bull.*, **7** : 148.
Martynov, 1930, *Proc. zool. Soc. Lond.*, **1930** : 110.

Walker gives the description of the type as follows :—

" Ferruginous, clothed with hoary hairs; palpi black, rather hairy; antennae black, more than five times the length of the body, ferruginous at the base, tips of the joints white;

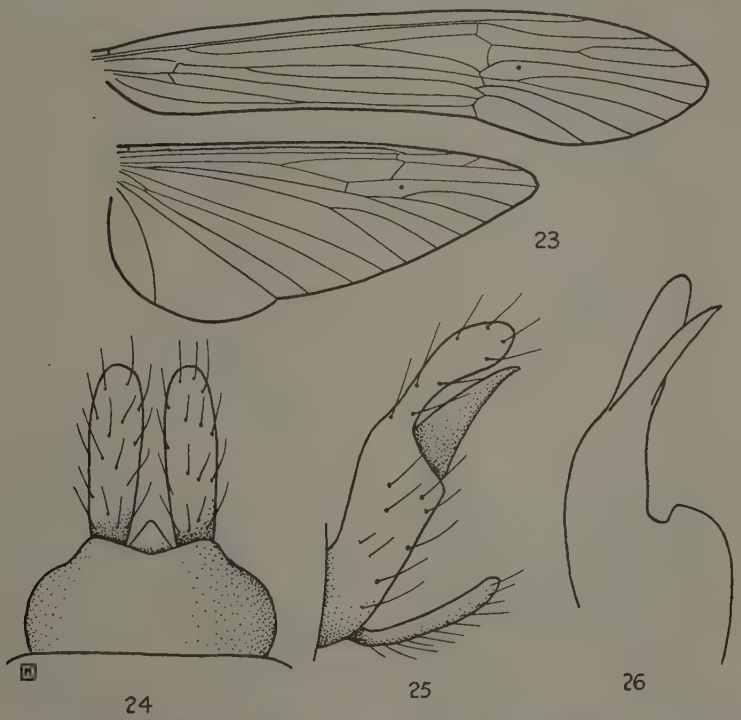


FIGS. 21–22.—*Triplectides latipennis* sp. n. ♀; 21. genitalia lateral, 22. dorsal.

abdomen at the base beneath and legs testaceous; fore-wings fawn-colour with darker veins; hind-wings slightly gray. Length of the body, 4–5 lines; of the wings, 15–19 lines."

To this I would add that the spur formula is 2, 2, 2 and the male genitalia are described as follows :—

Genitalia, ♂. Margin of the terminal dorsal segment widely excised with a small membranous triangular plate in the centre of the excision; superior appendages fringed with stout hairs, from above long with rounded apices; upper penis-cover large and rectangular, apical margin truncate with a narrow excision at its centre, lateral margins

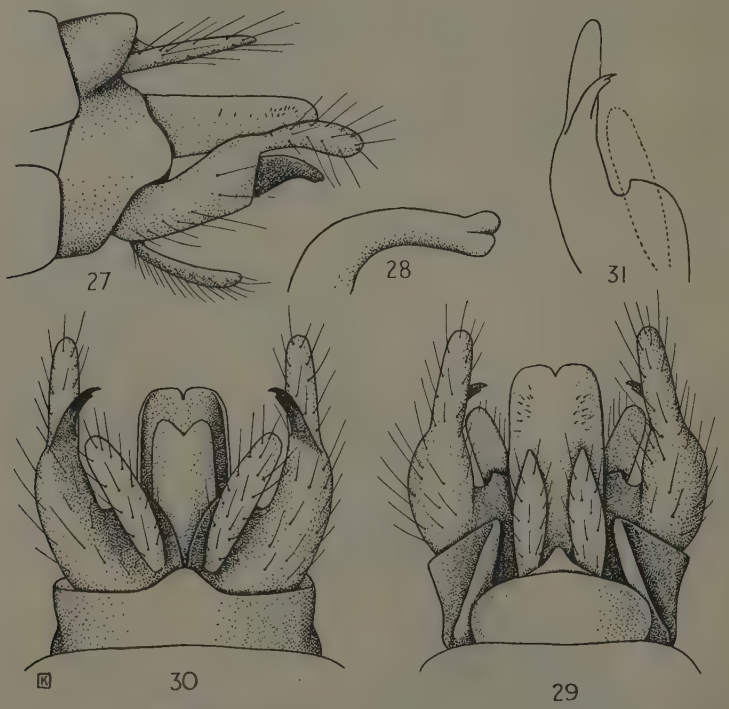


Figs. 23–26.—*Triplectides magna* Walker, Type ♂; 23. wings, 24. ninth dorsal segment and superior appendages dorsal, 25. inferior appendage lateral, 26 inferior appendage from beneath.

downwardly bent partly to enclose the penis, which has a deeply excised apex; inferior appendages three branched, main branch with a wide obtuse excision midway along its under surface; at the angle so formed is jointed the second branch which is short and terminates in an acute apex, directed slightly inwards from above and beneath; this apex is sometimes bifurcate; the main branch tends to become membranous at its apex, where it carries a few widely scattered hairs; from beneath, the appendages are very stout and at their bases arise the long finger-like third branches, lower surfaces fringed with long hairs; at the base of each appendage, seen from beneath, and inside the third branches, are broad somewhat hook-shaped plates; the margin of the terminal ventral segment is produced at its centre in a small triangular process.

Genitalia, ♀. Terminal dorsal segment somewhat produced at the centre; from above, margin truncate; there are two short, rather broad superior appendages and beneath these a pair of ear-shaped processes, set on edge from above and below, and striated on the inner surfaces; there is a membranous plate between them with an excised apex; margin of the eighth sternite excised at its centre.

The genitalia of the males are somewhat variable and I figure here those of a second example (figs. 27–31) in which it may be noticed that the superior appendages are more acute at their apices, the margin of the terminal dorsal segment rounded instead of excised and the second branches of the inferior



Figs. 27–31.—*Triplectides magna* Walker, Paratype ♂; 27. genitalia lateral, 28. penis, 29. genitalia dorsal, 30. ventral, 31. superior appendages from beneath.

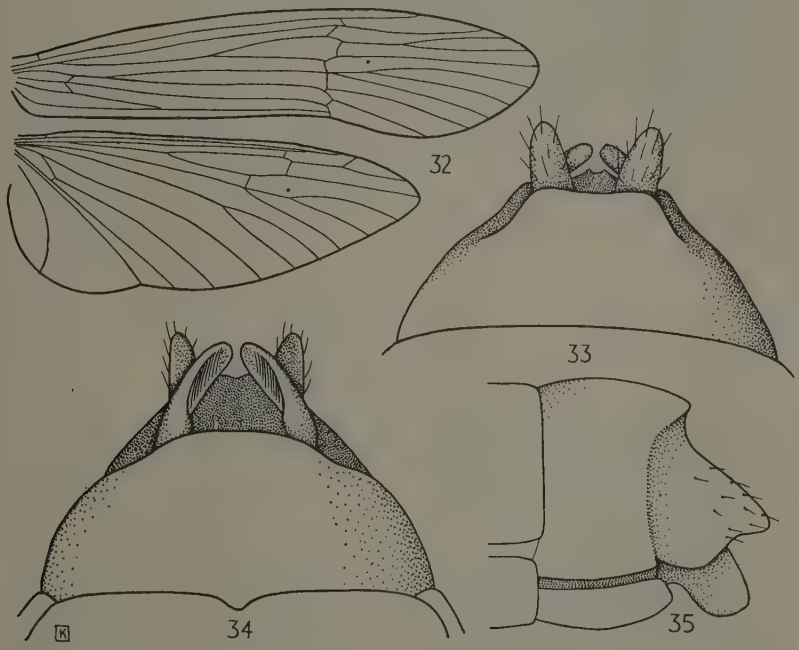
appendages bifurcate at their apices and perhaps shorter than those of the type. Walker in his Catalogue of the Neuroptera in the British Museum, records five examples, four from Dr. Hooker's collection and one presented by R. Butler, Esq. The series, however, would appear to have been somewhat larger as it now consists of five males bearing the registration label of the Hooker Collection as well as the single male presented by Mr. Butler.

I designate as the type of the species, the example in the British Museum labelled "V. D. L. 48–56" presented by Mr. Butler, with the abdomen now mounted in balsam.

The paratype, here figured, is entirely mounted in balsam; as the wings are all broken a second example was selected as type and figured less elaborately.

The species is very widely distributed; the recorded range extends from India to China and Japan, Australia, Tasmania, New Zealand, etc.

The example of *Notanatolica cognata* referred to by Ulmer as being in the Vienna Museum has unfortunately been entirely destroyed in the post.



FIGS. 32–35.—*Triplectides magna* Walker ♀; 32. wings, 33. genitalia dorsal, 34. ventral, 35. lateral.

Notanatolica legendrina Navás, of which the type is in the Paris Museum, varies slightly in the genitalia from the typical form of *magna* but not more so than do individuals in the Walker series from one another. I consider it therefore to be merely a local form of this species.

Triplectides ceylanicum sp. n. (figs. 36–37).

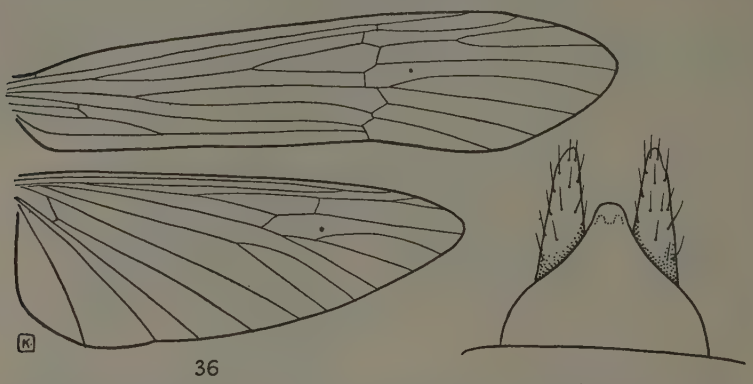
Head light fuscous with cream-coloured pubescence; palpi and legs of the same colour, spurs 2, 2, 2; antennae light fuscous with paler annulations; wings light fuscous with slightly darker pubescence.

Genitalia, ♂. The pattern is similar to that of *magna*, the species being separated by the extreme production of the centre of the margin of the terminal dorsal segment.

There are slight differences in neuration between the two species which may be best appreciated by a comparison of the figures.

Ceylon : Yala, 15–18.xii.31.

Type ♂ in the collection of the British Museum, paratype ♂, Ceylon, Marai Villa, N.W.P., 19.iii.33, in the collection of the Colombo Museum.



36 37

Figs. 36–37.—*Triplectides ceylanicum* sp. n. ♂; 36. wings, 37. ninth segment and superior appendages, dorsal.

Triplectides cephalotes Walker (figs. 38–42).

Leptocerus cephalotus Walker, 1852, *Cat. Neuropt. Brit. Mus.*, : 73.
Notanatolica cephalotes McLachlan, 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 257–8.
McLachlan, 1868, *J. linn. Soc.* (Zool.), **10** : 212–213.
Hutton, 1899, *Trans. N.Z. Inst.*, **31** : 242.
Hudson, 1904, *N.Z. Neuropt.*, : 77.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 34.
Ulmer, 1907, *Gen. Insect.*, **60a** : 130.

Walker gives the general description of the species as follows :—

"Ferruginous, testaceous beneath; head broader than the thorax: palpi slightly hairy: antennae testaceous, more than four times the length of the body, with a black ring on each joint; thorax with three brownish stripes: legs testaceous; wings subhyaline veins testaceous. Length of the body, 3¼ lines; of the wings, 14 lines."

To this I would add that the spurs are 2, 2, 2 and the male genitalia as follows :—

Genitalia, ♂. The genitalia very closely resemble those of *T. magna*; the margin of the terminal dorsal segment is more produced and the superior appendages are broader and shorter.

New Zealand.

Type ♂ with the abdomen mounted in balsam, in the British Museum collection.

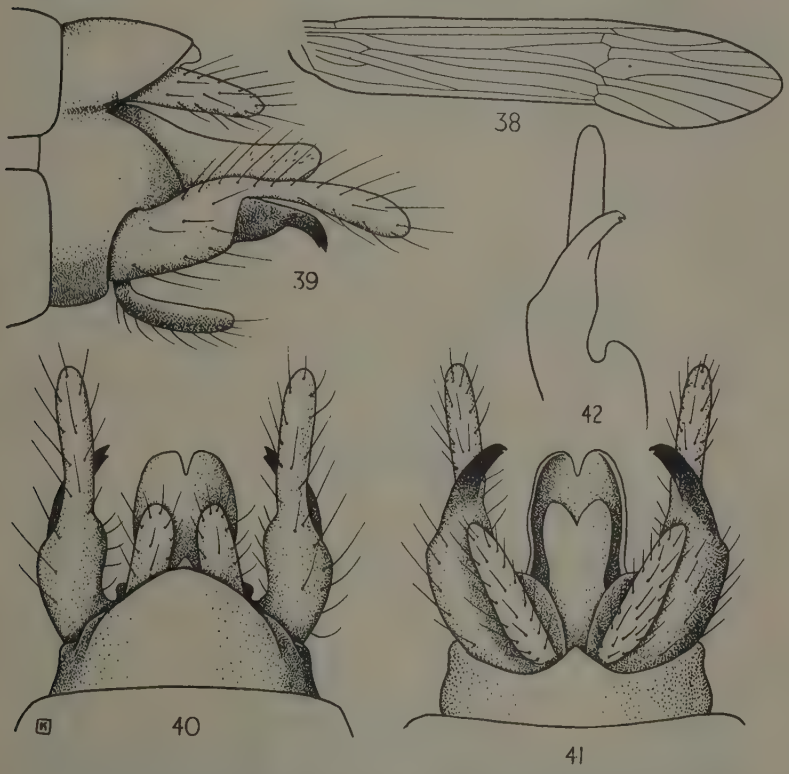
T. cephalotes may possibly be merely a form of *magna*.

Triplectides gilolensis McLach. (figs. 43–47).

Notanatolica gilolensis McLach., 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 258.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–4.
Ulmer, 1907, *Gen. Insect.*, **60a** : 130.
Ulmer, 1915, *Deuts. ent. Z.*, **1915** : 55–6, fig. 27.
Banks, 1930, *J.F.M.S. Mus.*, **16** : 395, 421.

Notanatolica opposita Betten *nec* Walker, 1909, *Rec. Ind. Mus.*, **3** : 240, pl. xvii, figs. 5–8.
Notanatolica luzonensis Navás, 1923, *Mem. Pont. Accad. n. Linc.*, (2) **6** : 16–17.
Ulmer, 1930, *Treubia*, **11** : 403.

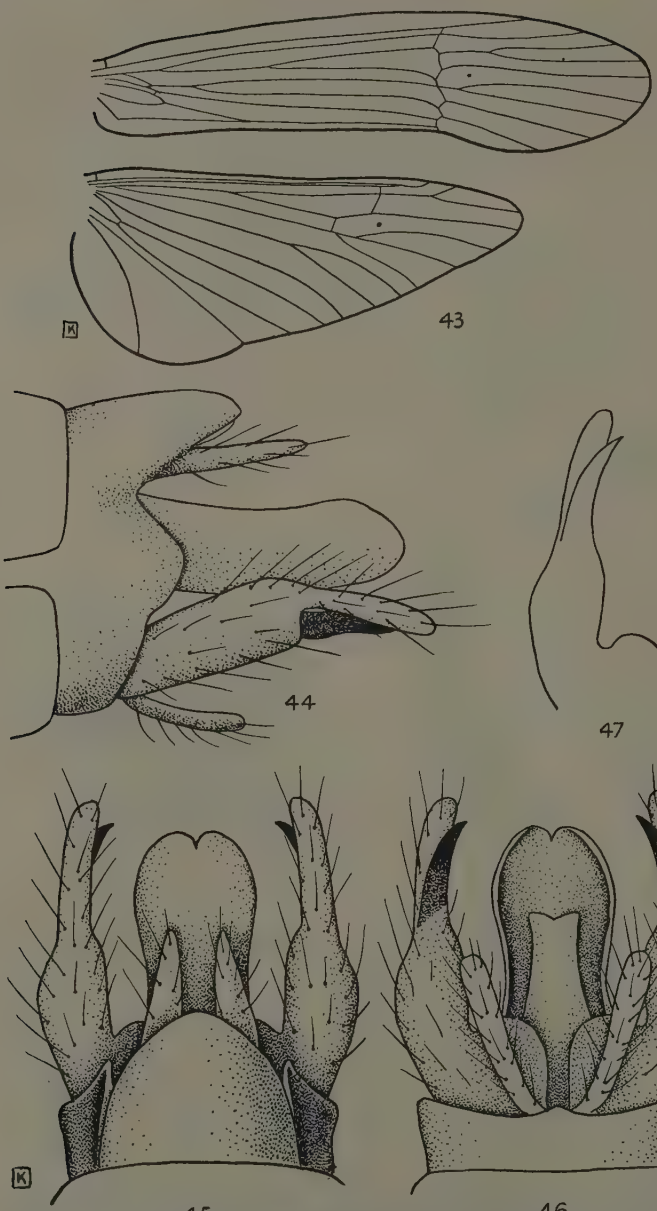
McLachlan in his description of this species has unfortunately selected a female, from Gilolo Island, for the type, but mentions that there is in Mr. Saunders' collection, now in the British Museum, "a male from New



FIGS. 38–42.—*Triplectides cephalotes* Walker ♂; 38. anterior wings, 39. genitalia lateral, 40. dorsal, 41. ventral, 42. inferior appendage from beneath.

Guinea which I think belongs to this species but is smaller than the female described above (exp. alar 14 lin.) whereas in *N. magna* the female is considerably smaller than the male." Having regard to the different habitat, it is perhaps inadvisable to attach too much importance to this discrepancy in size, and as the neuration, apart from the usual sexual difference, agrees very closely in the two specimens, I describe the New Guinea insect as the male of *gilolensis*. The wings of this species are generally smaller and more narrow than those of *magna*. Spurs 2, 2, 2.

The description of the colour of so old a specimen has little or no value now, so I will merely give a comparison of the genitalia with those of *magna*. The differences are very slight and perhaps the only one worth consideration



Figs. 43–47.—*Triplectides gilolensis* McLach. ♂; 43. wings, 44. genitalia lateral, 45. dorsal, 46. ventral, 47. inferior appendage from beneath.

is the different shape of the dorsal plate; attention may also be drawn to the slight variation in the neuration, particularly in the anterior wing which may be noted by reference to the figures.

Genitalia, ♂. Terminal dorsal segment much produced so that the apical margin is overlapping about the basal half of the superior appendages; these are longer and more slender with the apices more acute than those of the average form of *magna*; upper penis-cover large with the apical margin excised at the centre and hood-shaped as in *magna*; apex of the penis excised; inferior appendages closely resembling those of *magna* but with the notch on the lower surface rectangular rather than obtuse, second branches nearly as long as the first; the hooked plates at the bases of the appendages are rather more rounded than in *magna* with the hooks at the inner apical angles less pronounced; basal joints of the appendages rather more slender than in *magna* and the margin of the terminal ventral segment less produced.

Fiji: Lautoka, 6.i.1929 (*H. Phillips*); Gilolo Isl.; New Guinea; Selangor; Java; N. Borneo; Fed. Malay States; Australia: Darwin (Det. Banks); Philippine Is.; India.

Type ♀ (Gilolo Is.) in the collection of the British Museum.

I have examined the type of *Notanatolica luzonensis* Navás in the Paris Museum and consider it to be conspecific with *gilolensis* McLach.

I have also examined the example in the Indian Museum, Calcutta, referred to *T. opposita* by Prof. Betten, and am satisfied that it is this species. The known range is thus extended to India.

Notanatolica poujadei Navás.

Notanatolica poujadei Navás, 1927, *Bol. Soc. Iber. Cienc. nat.*, **26** (9): 73–4, fig. 8.

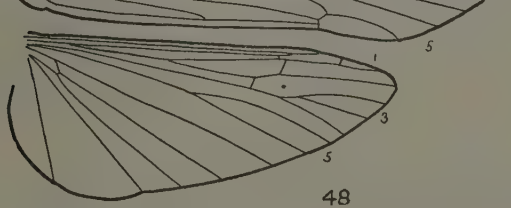
Habitat.—Ecuador: Loja (*A. Poujade*) 1909, Mus. de Paris.

I have examined this insect in the Paris Museum collection and find it to be a *Leptocellodes flaveola* Ulmer. The synonymy will therefore stand: *Leptocellodes flaveola* Ulmer.

Leptocellodes flaveola Ulmer, 1911, *Ann. Soc. ent. Belg.*, **55**: 22–3, figs. 8–9, 9*a*.
Notanatolica poujadei Navás (**syn. nov.**).

Triplectidina gen. n. (fig. 48).

Triplectides Tillyard *nec* Kolenati, 1924, *Trans. N.Z. Inst.*, **55**: 306.



48

Fig. 48.—*Triplectidina oreolimnetes* Till. ♂; wings.

This genus is erected to take Tillyard's *Triplectides oreolimnetes* and a new Tasmanian species, *nigricornis*, where the neuration does not conform with that of *Triplectides*.

In Dr. Tillyard's species, the inferior appendages of the genitalia conform closely with the form *Triplectides magna*; in *nigricornis* they are somewhat simpler, having only three branches with the customary lowest branch wanting.

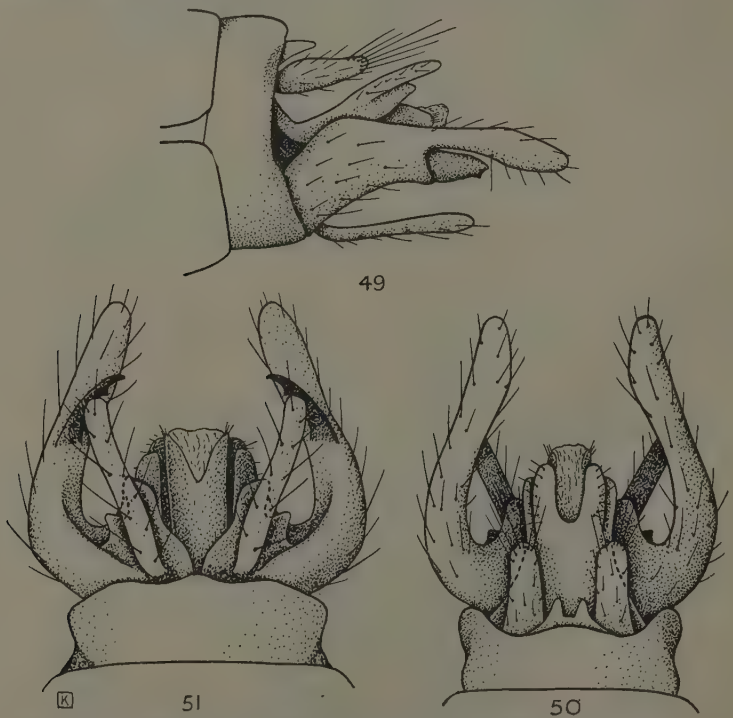
Anterior wing, forks nos. 1 and 5 present in the ♂, nos. 1, 3 and 5 in the ♀; discoidal cell longer than its footstalk, without a downward extension of the lower distal angle; lower margin of the cell thickened and closely approximating to the adjacent vein which is also thickened opposite that part; discoidal cell in the posterior wing varying in relation to its footstalk in the two species, forks nos. 1, 3 and 5 present in both sexes; spurs 2, 2, 4.

Genotype, *Triplectidina oreolimnetes* Tillyard.

Triplectidina oreolimnetes Tillyard (figs. 48–51).

Triplectides oreolimnetes Tillyard, 1924, *Trans. N.Z. Inst.*, **55** : 306–7, fig. 20, pl. 19, figs. 11–12.

Head fuscous, with pale-grey hairs; antennae fuscous with indistinct dark annulations; palpi fuscous; anterior wing fuscous more or less strongly mottled with white or greyish; posterior wing subhyaline.



FIGS. 49–51.—*Triplectidina oreolimnetes* Till. ♂; 49. genitalia lateral, 50. dorsal, 51. ventral.

Genitalia, ♂. Margin of the ninth dorsal widely excised with the centre of the excision produced and rounded; arising below the centre of the apical margin is a pair of short triangular processes set side by side; on each side arise the superior appendages which are short with rounded apices set with long stiff hairs; beneath them is the upper penis-cover which is of about twice the length of the superior appendages, apex cleft deeply and rather widely in two forks with a thin transparent plate arising beneath each; penis about the same length as its cover, apex truncate; lower penis-cover deeply excised; inferior appendages four-branched of the usual *Triplectides* pattern (*magna*, etc.), the underlying second branch terminating in a chitinous claw with a strong angular projection before the apex.

Length of anterior wing, ♂, 10 mm.

New Zealand: Gouland Downs, Nelson Province, 7.ii.1922 (*R. J. T.*), 2000 ft. (type); Mount Arthur Tableland, 20.ii.1921 (*A. Philpot*), 4500 ft.

All the above in the Cawthron Institute, Nelson, New Zealand.

New Zealand: Waimarino, i.1931 (*G. V. Hudson*); Ohakune, N. Island, 1922–3 (*T. R. Harris*), in the collection of the British Museum.

Triplectidina nigricornis sp. n. (figs. 52–55).

Head black clothed with short white hairs, basal joint of the antenna large, reddish-brown clothed with short white hairs, other joints dark brown, nearly black with white annulations. Palpi black with short white hairs.

Anterior wings dark castaneous with greyish and dark fuscous pubescence, the two approximate veins beneath the discoidal cell forming a conspicuous dark streak; posterior wing dark fuscous, neuration yellowish. Legs fuscous clothed with short greyish hairs, spurs 2, 2, 4, those of the anterior short and fuscous, median and posterior longer and white.

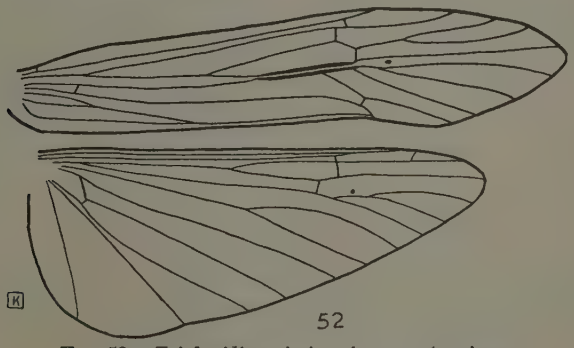
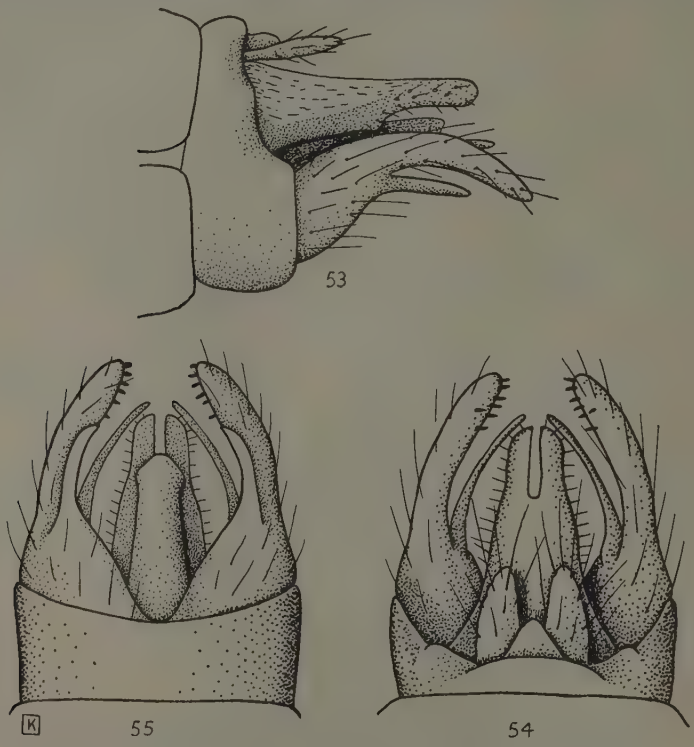


Fig. 52.—*Triplectidina nigricornis* sp. n. ♂; wings.

Genitalia, ♂. Margin of the ninth dorsal segment with a triangular projection at its centre; superior appendages parallel and situated close together, one on each side of the central triangle, fringed with long hairs, short, rather broad, apices subacute; below them is a long upper penis-cover deeply and narrowly cleft at its apex and, from the side, with a broad base, membranous towards its upper surface, more strongly chitinised in its lower part and at the cleft apex and with a projecting angle rather more than midway towards the apex on its lower margin; lateral margins bearing short and rather widely spaced hairs or spines; penis from beneath, slightly shorter than its upper cover; inferior appendages three-branched, the upper and outer branches fringed with long hairs, stout at their bases, incurving, apices bearing strong black peg-like teeth on their inner surfaces; arising at their

bases is a pair of slender branches, caliper-shaped as seen from above, apices, only, visible from the side; the third branches only visible from the side and from beneath; they arise



FIGS. 53–55.—*Triplectidina nigricornis* sp. n. ♂; 53. genitalia lateral, 54. dorsal, 55. ventral.

towards the bases of the appendages and are seen from the side to be shorter and narrower than the upper branches, lying approximately parallel with them.

Length of anterior wing, ♂, 12 mm.

TASMANIA: Miena, 3300 ft., Dec., 1929 (*H. M. Stephen*).

Type ♂—paratypes in the author's collection.

Hudsonema gen. n.

Tetracentron Brauer, 1865, *Verh. zool.-bot. Ges. Wien*, **15**: 418.
Brauer, 1866, *Novara Reise, Neuropt.*, : 11.
F. Müller, 1881, *Z. wiss. Zool.*, **35**: 77.
Pseudonema McLach., 1862, *Trans. ent. Soc. Lond.*, (3) **1**: 305.
Hudson, 1904, *N.Z. Neuropt.*, : 72.
Triplectides Ulmer (*partim*), 1907, *Gen. Insect.*, **60a**: 131.

Maxillary palpi, first and fourth joints nearly equal in length, second longer than the third, third longer than the first or fourth, fifth about as long as the third (these proportions

are inclined to vary in individuals and in the ♀). Anterior wing long and narrow; in the ♂, forks nos. 1 and 5 present; in the ♀, nos. 1, 3 and 5; discoidal cell long and narrow, normal in shape; posterior wing broad at the base, elongate towards the apex; forks nos. 1, 3 and 5 present in both sexes; discoidal cell very long and narrow. Spurs 2, 2, 4.

Genitalia, ♂. Superior appendages, large, broad, and triangular.

Genotype, *Tetracentron amabilis* McLach.

Hudsonema amabilis McLach. (figs. 56–62).

Tetracentron amabile McLach., 1868, *J. linn. Soc.* (Zool.), **10** : 201, pl. II, figs. 5 *a–d.*
Pseudonema amabilis Hutton, 1899, *Trans. N.Z. Inst.*, **31** : 241.
Hudson, 1904, *N.Z. Neuropt.*, : 75, pl. x, figs. 8 and 9.
Triplectides amabilis Ulmer, 1905, *Ann. nat. Hist. Hofmus. Wien*, **20** : 72.
Ulmer, 1907, *Gen. Insect.*, **60a** : 131.
Tillyard, 1926, *Ins. Austr. N. Zealand* : 392, pl. 26, fig. 11.

Head fuscous clothed with greyish hairs; antennae long and slender, fuscous, each joint annulated with a narrow whitish ring except the basal which is wholly fuscous, clad with greyish hairs; palpi fuscous. Anterior wing very long and narrow, apical margin oblique, whitish-cinereus with numerous fuscous irrorations, an oblique spot on the costa slightly before the apex, apical margin fuscous with a conspicuous white spot above the anal angle, a pale yellowish-white longitudinal streak on the middle of the disc ending at the anastomosis. Spurs 2, 2, 4.

Genitalia, ♂. Dorsal margin of the ninth segment shallowly excised at its centre with two short semi-transparent processes arising one on each side of the excision directed towards the tail; superior appendages from the side, broadly triangular; beneath them is the upper penis-cover, broad at the base, narrowing to an acute apex directed slightly upward; penis broad at the base, bifurcate from about its centre, each fork rather acute; no lower penis-cover; inferior appendages unbranched, broad at the base both from the side and beneath; from the side strongly ridged along its length towards the base; from beneath strongly angulated midway along the inner margins, and with strongly pigmented areas carrying long hairs stretching from the outer margins of the apices to the inner margins of the bases; ventral margin of the ninth segment slightly excised. The forks of the penis in dried examples are sometimes pressed closely together to give the appearance of a single spine as mentioned in McLachlan's description.

Genitalia, ♀. Dorsal margin of the ninth segment produced at its centre with two short triangular processes one on each angle of the produced portion; outside and below these processes, from above, are two broadish processes with narrow bases, narrow as seen from the side; beneath them is the tubular piece composed of four plates, dorsal slightly longer than the others and overhanging the orifice; from the side, the lateral plates are broad with broad, slightly concave apical margins.

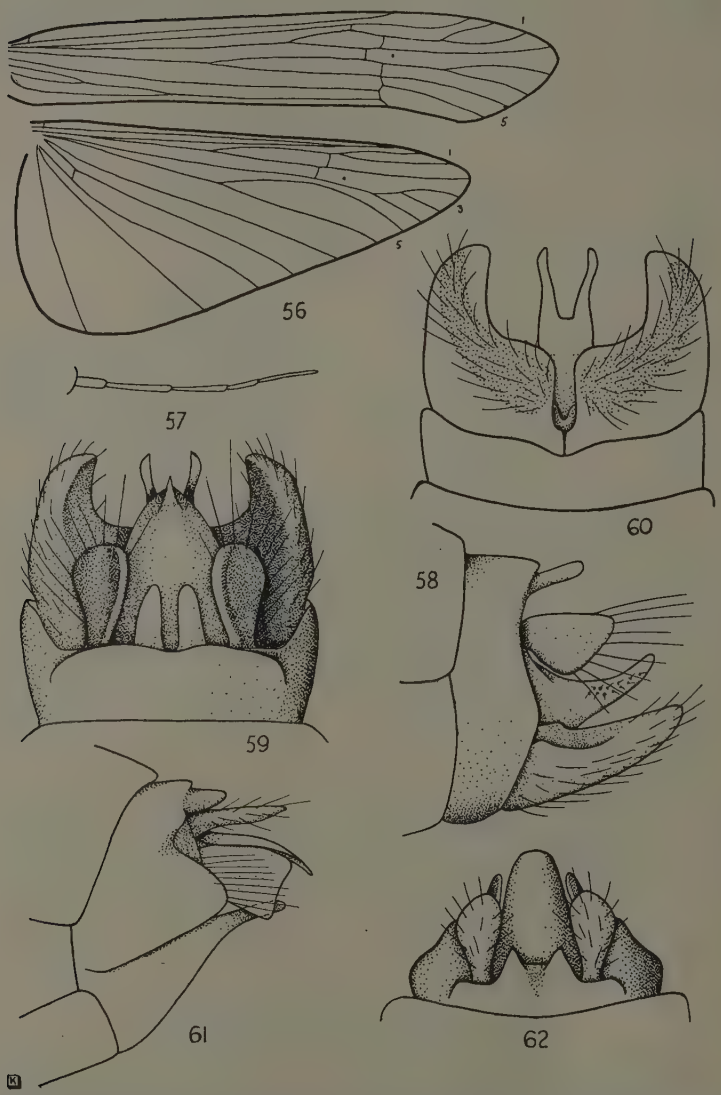
Length of anterior wing, ♂ and ♀, 14 mm.

New Zealand.
Type in McLachlan's collection.

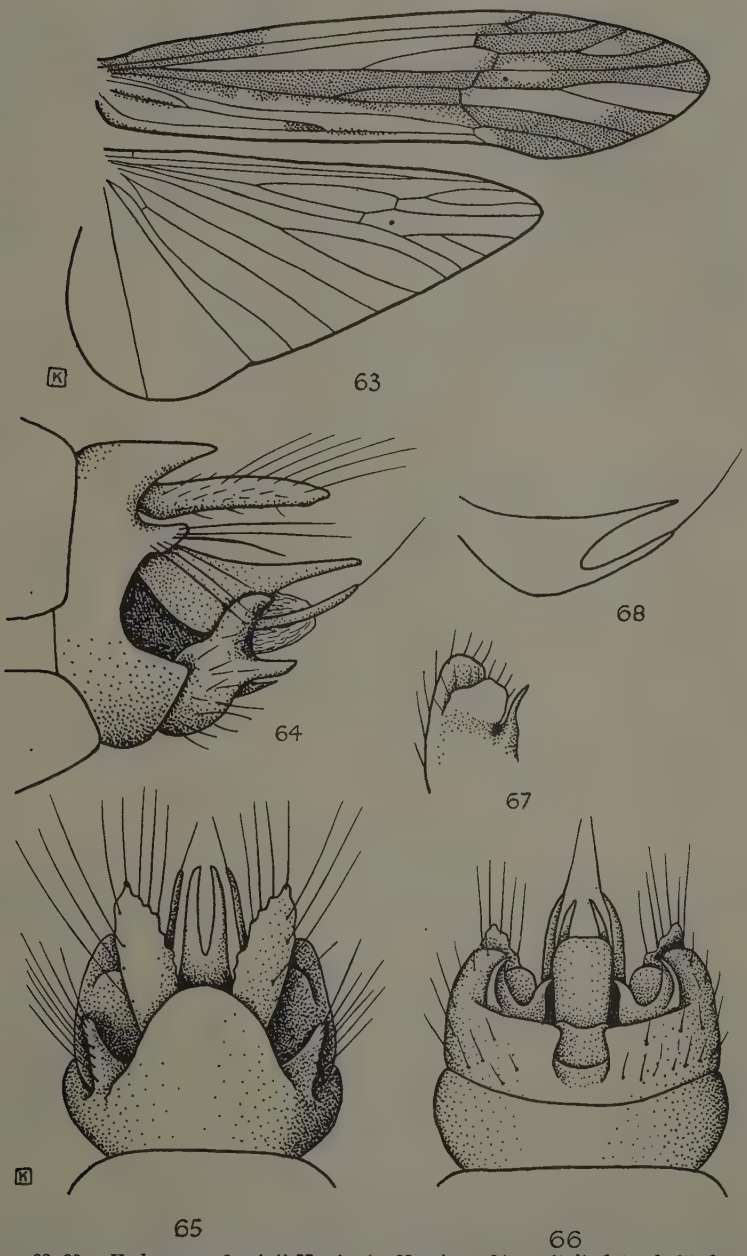
Hudsonema flaminii Navás (figs. 63–68).

Triplectides flaminii Navás, 1926, *Rev. chilena Hist. nat.*, **30** : 335–6, fig. 49 *a, b.*
Navás, 1930, *Rev. chilena Hist. nat.*, **33** : 24.
Navás, 1930, *Rev. chilena Hist. nat.*, **34** : 363.

Head dark ochraceous with whitish hairs; palpi dark ochraceous; antennae dark ochraceous with pale narrow annulations at the joints; prothorax, mesothorax and metathorax dark ochraceous; wings ochraceous with longitudinal white streaks; legs ochraceous, spurs 2, 2, 4.



FIGS. 56–62.—*Hudsonema amabilis* McLach.; 56. wings ♂, 57. maxillary palpus ♂, 58. genitalia ♂ lateral, 59. dorsal, 60. inferior appendage and penis ventral, 61. genitalia ♀ lateral, 62. dorsal.



FIGS. 63–68.—*Hudsonema flaminii* Navás ♂; 63. wings, 64. genitalia lateral, 65. dorsal, 66. ventral, 67. inferior appendage from above, 68. upper-penis cover lateral.

Genitalia, ♂. Ninth segment from above with the dorsal margin much produced and rounded; from the side with small, acute triangular side-pieces situated towards the upper part and much broader triangular projections towards the lower part of its lateral margins; superior appendages broad, apices acute, inner margins very serrate; upper penis-cover deeply and narrowly cleft at its apex with a fine branch arising from each lower lateral margin and terminating in a fine bristle; penis short and fleshy; lower penis-cover short and broad with a widely excised apical margin; inferior appendages very short, four-branched, the two outer branches, from above very broad, the third branch (the inner and upper) narrower and slightly sinuous; the fourth, the lowest, is very closely pressed against and beneath the outer branch; bases of the appendages from beneath, very broad and nearly rectangular.

Length of anterior wing, ♂, 14 mm.

Examples in the British Museum collection labelled :—S. Chile : Llanquihue Prov., Eusenada, 14–15.xii.1926 (*F. and M. Edwards*).

Whereabouts of type not stated, Chile; Lonquimay.

Hudsonema discolor Navás.

Triplectides discolor Navás, 1932, *Rev. Soc. ent. Argent.*, **5** : 83–4, fig. 13.
Navás, 1933, *Rev. chilena Hist. nat.*, **37** : 234.

Habitat.—Chile : Marga-Marga, 27.iv.1931 (*P. Felix Jeffuel*).

Whereabouts of type not stated, but a paratype (?) ♀ in the collection of the Paris Museum.

The normal form of the discoidal cell in the anterior wing indicates affinity with *Hudsonema* rather than *Triplectides*.

Notalina gen. n. (figs. 69–70).

The genus *Notalina* differs from *Hudsonema* in the absence of fork 1 in the posterior wing. Spurs 2, 2, 4.

Genotype, *Notalina parkeri* sp. n.

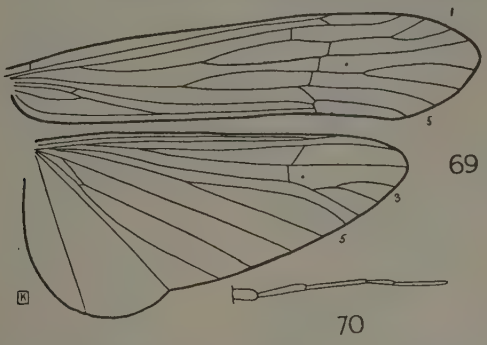
Notalina parkeri sp. n. (figs. 69–77).

Head black with greyish hairs; antennae dark fuscous with indistinct darker annulations; wings denuded in the examples under examination; legs, femora dark fuscous, tibiae and tarsi pale cream-coloured, spurs 2, 2, 4; abdomen dark fuscous with a pale, lateral longitudinal stripe.

Genitalia, ♂. Margin of the ninth dorsal segment excised at its centre with two small triangular projections one on each side of the excision; superior appendages short and spindle-shaped, covered with long hairs, apices acute; beneath them from above is a large upper penis-cover, apex excised to about half-way with a wide U-shaped excision; from the side, the base of this cover is deep and the process narrows rather abruptly in a produced finger-like apex; penis, with a dilated membranous apex as seen from beneath, is furnished with a pair of penis-sheaths arising towards the base and pressed against the under surface, each inclining slightly inward; inferior appendages inclining slightly towards each other, four-branched, the main and outer branch large, concave and, as seen from beneath, dilated before the apex; seen from beneath, towards the base of each appendage is a small rectangular branch with the outer apical angle produced in a short spine; at the extreme base is a third branch also very short, set with short fine hairs and directed slightly upward; the fourth branches are very short and set far back on the upper margins of the bases of the

appendages; they are strongly chitinised and lie on each side of the penis, directed outward; the bases of the appendages from beneath, appear to join to form a large triangular tongue with a rounded apex, lying between them.

Genitalia, ♀. The terminal segment from above bears two pairs of small triangular



FIGS. 69–70.—*Notalina parkeri* sp. n. ♂; 69. wings, 70. maxillary palpus.

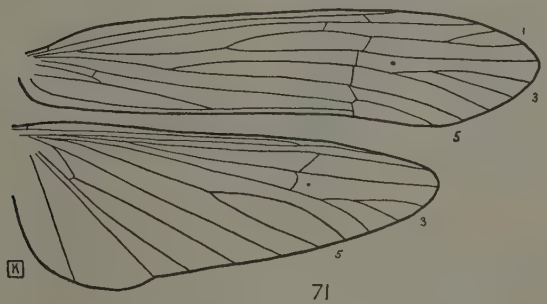


FIG. 71.—*Notalina parkeri* sp. n. ♀; wings.

processes, the outer pair much larger than the inner; the tubular piece is formed by four plates, the two side plates being large and somewhat quadrate.

Length of anterior wing, ♂, 12 mm.; ♀, 9·5 mm.

TASMANIA: Great Lake; Miena, i.1930, i.1931 (*C. Parker*).

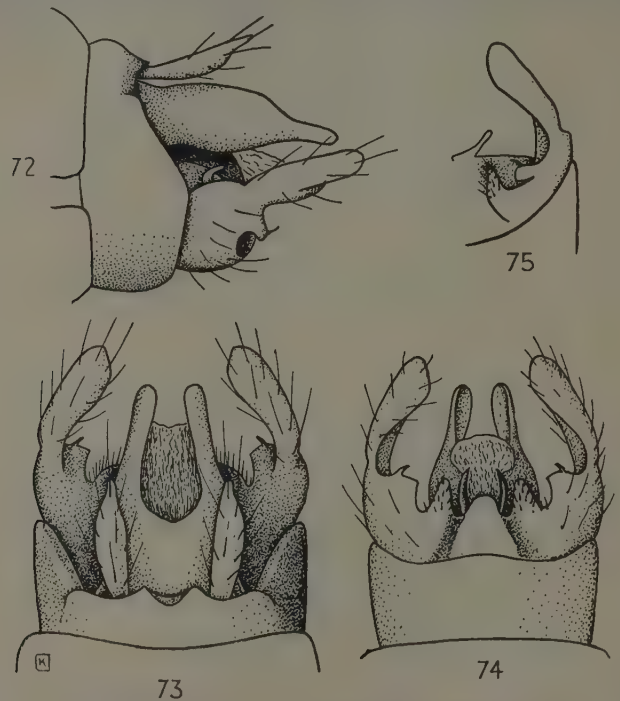
Type ♂ in the author's collection, paratypes in the British Museum collection.

Notalina delicatula Ulmer (figs. 78–79).

Triplectides delicatula Ulmer, 1908, *Michaelsen & Hartmeyer, Fauna S.W. Austr.*, **2** (3): 27–9, figs. 1–3.
Ulmer, 1916, *Ark. Zool.*, **10** (13): 17.

Ulmer gives good figures of this species in his 1908 description from which it is evident that *delicatula* and *parkeri* sp. n. are very closely allied. Through the courtesy of Dr. Titschack of the Hamburg Museum, I have been able to examine a paratype of *delicatula* and find differences in the shape of the inferior appendages which I consider sufficient to separate the two species; the rect-

angular process with the outer produced angle of *parkeri* is replaced in *delicatula* by a short pointed process, and the short third angular process of the former



Figs. 72–75.—*Notalina parkeri* sp. n. ♂; 72. genitalia lateral, 73. dorsal, 74. ventral, 75. inferior appendage from beneath.

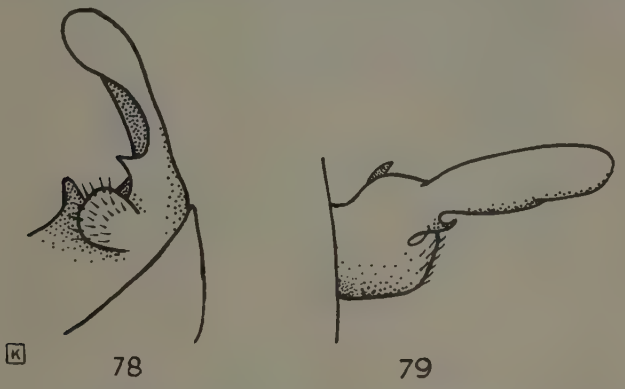
Figs. 76–77.—*Notalina parkeri* sp. n. ♀; 76. genitalia lateral, 77. dorsal.

is replaced by a broad rounded process in the latter species. These last processes appear rectangular in Ulmer's figure. These differences will be appreciated by a comparison of Ulmer's figure of the ventral aspect of *delicatula*

with the corresponding figure of *parkeri* given in this revision, and two additional aspects of the inferior appendage of *delicatula* are shown in figs. 78–79.

S.W. Australia : Lion Mill, 11.x.1905.

Type ♂ in the Hamburg Museum, with paratypes ♂ and ♀; one ♂ in the British Museum collection received in exchange.



Figs. 78–79.—*Notalina delicatula* Ulmer ♂; 78. superior appendage obliquely ventral, 79. lateral.

Notalina flava Ulmer.

Triplectides flava Ulmer, 1908, *Michaelsen & Hartmeyer, Fauna S.W. Austr.*, **2** (3) : 29–30, fig. 4.
Ulmer, 1916, *Ark. Zool.*, **10** (13) : 17.

Ulmer's excellent figures accompanying the description of the species in 1908 leave no doubt as to the identity of this insect.

A specimen in the Paris Museum is labelled " Triplectides loboptera Navás, Type." Father Navás has informed me *in litt.* that no description has been published and this is nothing more than a catalogue name.

South Australia.

Type ♂ and paratypes ♂ and ♀ in the collection of the Hamburg Museum.

Symphitoneuria Ulmer (fig. 80).

Symphitoneuria Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31.
Ulmer, 1907, *Gen. Insect.*, **60a** : 131–2, pl. 18, fig. 165.

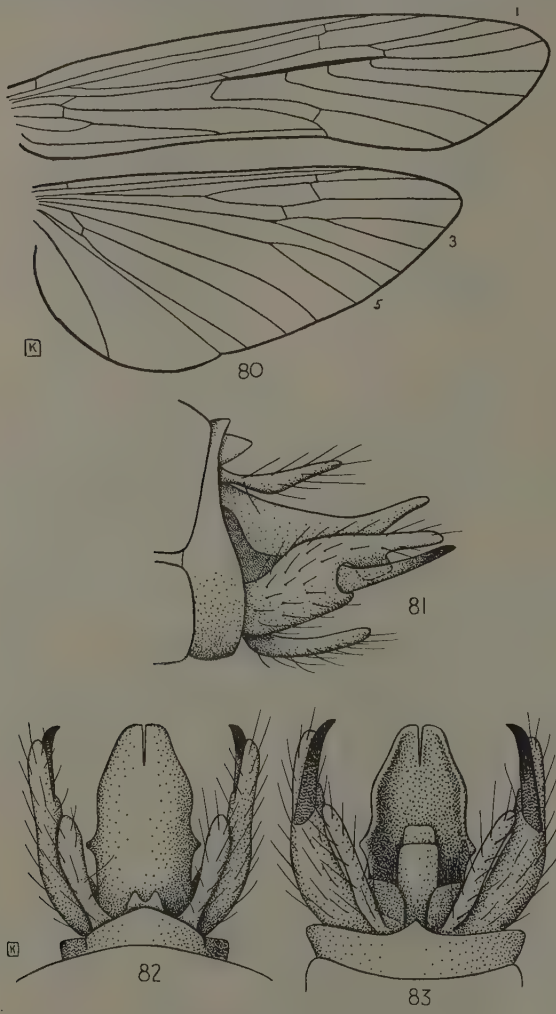
In the anterior wing, neuration towards the post-costal half irregular, media merging in the sector along the lower margin of the discoidal cell; fork no. 1 sessile; posterior wing, forks nos. 3 and 5 present; discoidal cell rather short and broad. Male genitalia conforming to the *Triplectides* pattern. Spurs 2, 2, 2.

Genotype, *Leptocerus exiguus* McLach.

Symphitoneuria exigua McLach. (figs. 80–83).

Leptocerus exiguus McLachlan, 1862, *Trans. ent. Soc. Lond.*, (3) **1** : 307.
McLachlan, 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 257.
Symphitoneuria exigua Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–2, fig. 40.
Ulmer, 1907, *Coll. Selys*, **6** (1) : 41.
Ulmer, 1907, *Gen. Insect.*, **60a** : 132, pl. 18, fig. 165.
' Leptocerus filosus " *nom. nud.* in Brussels Museum.

Examples of the species before me are not in a sufficiently good condition for a description of their general appearance to be of much value.



Figs. 80–83.—*Symphitoneuria exigua* McLach. ♂; 80. wings, 81. genitalia lateral, 82. dorsal, 83. ventral.

McLachlan's original description is as follows :—

" Antennae whitish with an ochreous tinge, in the basal third finely and distantly [?] annulated with black; eyes brownish-black; head and thorax ferrugineous; abdomen darker; legs pale whitish-ochreous; anterior wings somewhat transparent, not very thickly

clothed with tawny hairs, veins ochreous; posterior wings more transparent, beautifully iridescent, reflecting various colours.

"Long. corp. 3 lin.; exp. alar 7½ lin.

"AUSTRALIA: Moreton Bay."

The type is in the British Museum collection but lacking the abdomen and posterior wings. Through the courtesy of Monsieur A. d'Orchymont, who sent me an example from the Brussels Museum labelled Melbourne, I have been enabled to add a description and figures of the male genitalia and neuration. Whilst neuration is very irregular, the genitalia conforms, more or less, to the *Triplectides* pattern.

Genitalia, ♀. Dorsal margin of the ninth segment produced at its centre to make a wide shallow triangle beyond the apex of which projects a small process with a deeply excised apical margin; superior appendages short, dilating gradually towards their apices; upper penis-cover very long, rather broad, apex deeply cleft, small triangular projections at about the centre of the lateral margins; penis short, apex truncate, a semi-transparent and shorter plate closely adpressed beneath may possibly be a lower penis-cover; inferior appendages three-branched, the main or upper branch shorter than the second which terminates in a claw-shaped apex. This formation is unusual. In all the other genera in which this pattern of inferior appendages is found, the second branch is the shorter. Arising from the inner and lower margin of the first branch, just above the point of junction of the second is a small rectangular plate, directed downward, apical margin somewhat serrate and fringed with stiff hairs; the third branches arise at the bases of the appendages, their apices extending as far as the rectangular plates; also at the bases of the appendages, extending inwards are large rounded lobes corresponding to the fourth branches in some species of *Triplectides*; ventral margin of the ninth segment produced at its centre in a small triangle.

Atriplectides gen. n. (fig. 84).

Discoidal cell without the extension of the lower distal angle found in *Triplectides*; small in both wings; anterior wing forks nos. 1 and 5 present in the ♂, nos. 1, 3 (?) and 5 in the ♀, apical cells 1 and 4 sessile, last apical cell very broad, an additional apical cell in the ♀; discoidal cell short and narrow, much shorter than its footstalk; in one example the neuration is aberrant so that a cell is formed to give the appearance of a false median cell;

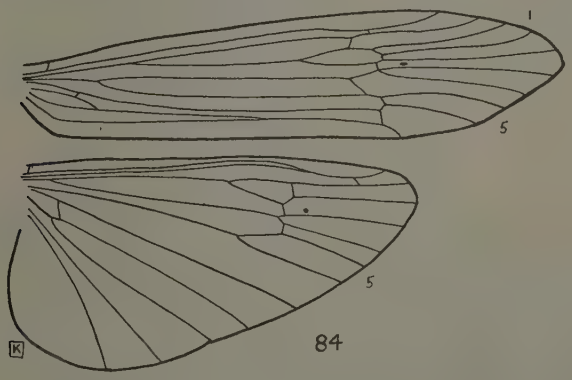


FIG. 84.—*Atriplectides dubia* sp. n. ♂; wings.

posterior wing differs widely in its neuration from that in other genera of the subfamily; fork no. 5 only is present in both sexes, all the other apical cellules sessile; discoidal cell short, shorter but broader than that of the anterior wing. In the single species the spurs are 2, 4, 4, a very unusual combination in the LEPTOCERIDAE.

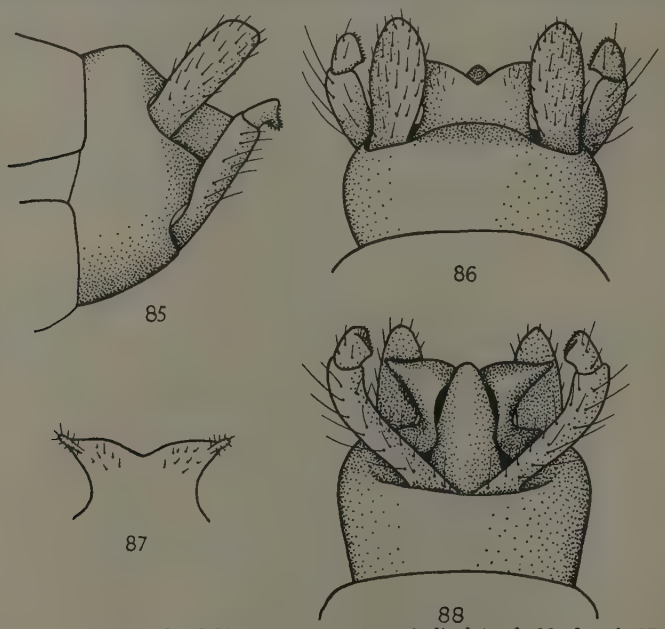
In the genitalia, the inferior appendages differ from those of all the other species in the subfamily in being two-jointed.

It is possible that this genus is wrongly placed in the LEPTOCERIDAE and that it may fit better in the ODONTOCERIDAE. Further knowledge of the Tasmanian Trichoptera is required and in the meanwhile it seems better to describe and figure the very few known species and leave their final position in the Order to the future.

Genotype, *Atriplectides dubia* sp. n.

Atriplectides dubia sp. n. (figs. 84–90).

Head dark fuscous with dark greyish to fuscous pubescence; oculi nearly black; palpi dark fuscous; antennae fuscous with paler annulations; wings dark fuscous with dark hairs

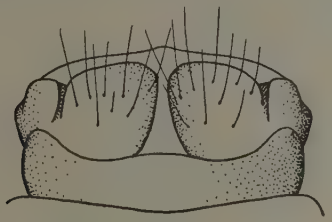


FIGS. 85–88.—*Atriplectides dubia* sp. n. ♂; 85. genitalia lateral, 86. dorsal, 87. upper penis-cover dorsal, 88. genitalia ventral.

which are inclined to group and form nearly black spots; fringe darker so that there is a nearly black border to the wings; anterior legs with dark spurs, other legs pale fuscous closely covered with cream-coloured hairs, spurs cream-coloured, 2, 4, 4.

Genitalia, ♂. From above, the margin of the ninth dorsal segment is produced downward to meet the upper penis-cover; from the side there is a triangular projection of the distal margin; superior appendages widely separated, short with subacute apices; upper

penis-cover very wide with excised apical margin and widely extended apical angles each with a small serrate ridge on its upper surface at the extreme apex and two small processes, inwardly directed, on the ventral side, one on each side of the excision; penis about as long as its upper cover, apex projecting in the angle of the excision; inferior appendages unbranched and two-jointed, basal joint long with nearly parallel margins from beneath, but slightly constricted at the base from the side, terminal joint very short, apex truncate with a serrate ridge on its lower surface which, from the side, projects to make a downwardly pointing lower apical angle.



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FIGS. 89–90.—*Atriplectides dubia* sp. n. ♀; 89. genitalia dorsal, 90. apex of anterior wing.

Genitalia, ♀. Seen from above and slightly from behind, there are two pairs of lobes, the inner large and rounded, the outer small and oval. Margin of the terminal dorsal segment produced towards the edges.

Length of anterior wing, ♂, 12 mm.; ♀, 13 mm.

TASMANIA: Great Lake; Miena, i.1931 (*C. Parker*); Penstock, i.1931 (*C. Parker*); Great Lake, xi.1933 and ii.1934 (*C. Parker*).

Type ♂ and paratypes ♂ and ♀ in the British Museum and author's collection.

Loticana gen. n.

This genus is erected to take Walker's species *oppositus*, described originally in *Leptocerus* and subsequently transferred by McLachlan to *Notanatolica*.

It is unfortunate that the ♂ continues unknown or at least inadequately described.

The discoidal cell of the anterior wing is normal in shape, forks nos. 1, 3 and 5 present, fork no. 1 sessile; posterior wing, forks nos. 3 and 5 present, a cross-vein uniting the radius with the sector; cell below fork no. 3 reaching the cross-vein. Spurs 2, 2, 2.

Genotype, *Leptocerus oppositus* Walker.

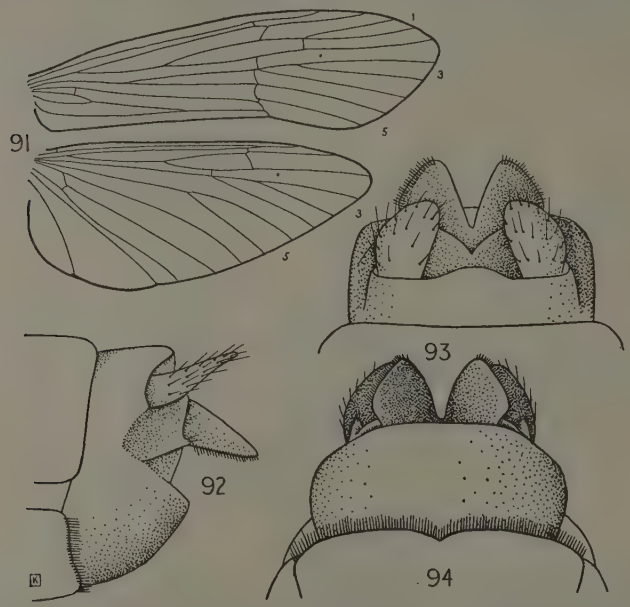
Loticana opposita Walker (figs. 91–94).

Leptocerus oppositus Walker, 1852, *Cat. Neuropt. Brit. Mus.*, : 73.
Notanatolica opposita McLachlan, 1866, *Trans. ent. Soc. Lond.*, (3) **5** : 257.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–5.
Ulmer, 1907, *Gen. Insect.*, **60a** : 131.
Ulmer, 1916, *Ark. Zool.*, **10** (13) : 17–18, fig. 22.
Ulmer, 1930, *Treubia*, **11** : 404, 462.
Banks, 1913, *Proc. ent. Soc. Wash.*, **15** : 176.
Banks, 1916, *Philipp. J. Sci.*, **11** (D) : 213.
Döhler, 1915, *Deuts. ent. Z.*, **1915** : 406.
Martynov, 1931, *Mem. Mus. Hist. nat. Belg.*, **4** (2) (hors série) : 15.

Walker's description of the species is as follows :—

"Ferruginous, blackish beneath, clothed with pale hairs; antennae pale testaceous, almost whitish, full thrice the length of the body; legs testaceous: wings gray, slightly clothed with pale brown down; veins pale. Length of body, 2½–3 lines; of the wings, 10–11 lines."

Genitalia, ♀. Centre of the margin of the terminal dorsal segment produced; there are two rather broad superior appendages and beneath them, from above, are two triangular membranous processes, rather closely fringed; between the superior appendages and these



Figs. 91–94.—*Loticana opposita* Walker ♀; 91. wings, 92. genitalia lateral, 93. dorsal, 94. ventral.

processes are plates, slightly produced, from below, at the outer and from the side, the lower angles; the eighth sternite is strongly chitinised and closely fringed, with a slight excision at the centre of its apical margin.

Tasmania; W. Australia.

Type ♀ in the British Museum collection mounted in balsam with one pair of wings mounted dry.

In his Catalogue, Walker records only *one* example from Van Dieman's Land from Dr. Hooker's sale. In the British Museum collection there are two examples from Dr. Hooker's collection and Dr. Ulmer records a third, presented to him by Mr. Kirby and mentioned as a co-type. It would appear therefore that there can only be one type, and the second example in the British Museum, and the third, in Dr. Ulmer's collection, are merely additional examples.

The insect described by Betten (1909, *Rec. Ind. Mus.*, **3**: 240, pl. XVII, figs. 5–8) is *Triplectides gilolensis* McLach.

I have been unable to obtain a male of the species, so that this sex continues to be unknown or undescribed.

Atanatolica gen. n. (fig. 95).

The genus *Atanatolica* has been erected to take Brauer's *brasiliana* which differs in respect to neuration from the typical *Triplectides* pattern. The discoidal cell of the anterior wing is regular in form without the downwardly produced lower apical angle; forks nos. 1 and 5

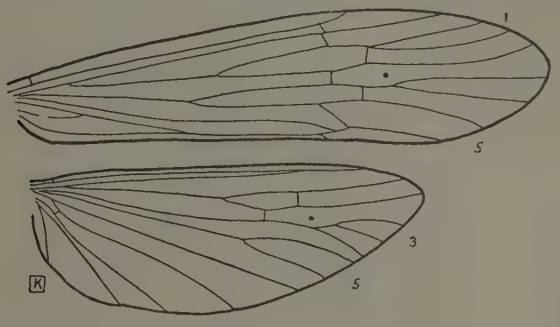


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Fig. 95.—*Atanatolica brasiliana* Brauer ♂; wings.

present, no. 1 sessile and very acute at its base; posterior wing, discoidal cell rather short, forks nos. 3 and 5 present; no cross-vein between the sector and radius which are widely separated; cell below fork no. 3 not reaching the cross-vein. Spurs 0, 2, 2; inferior appendage with only two branches.

Genotype, *Mystacides brasilianus* Brauer.

Atanatolica brasiliana Brauer (figs. 95–98).

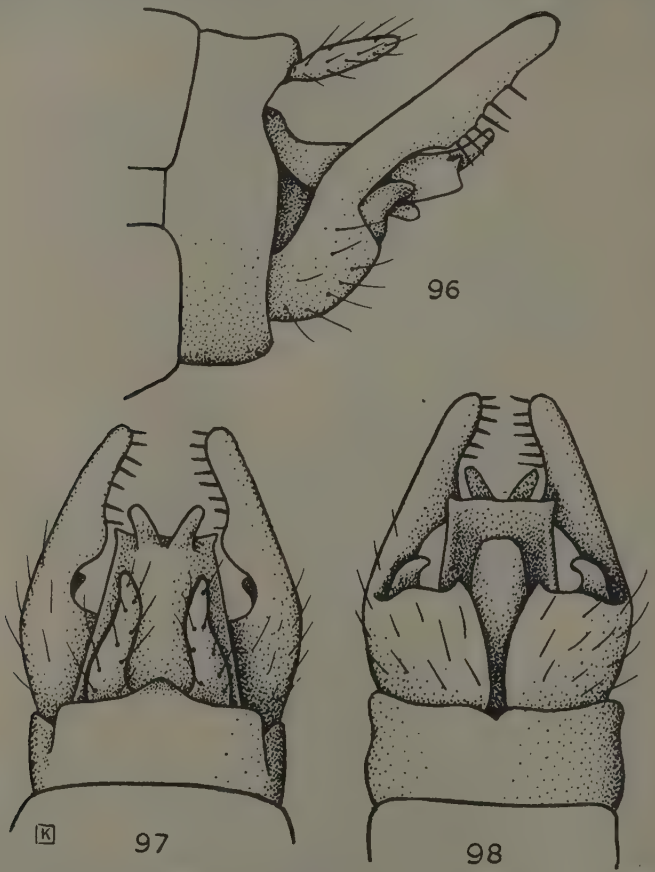
Mystacides brasilianus Brauer, 1865, *Verh. zool.-bot. Ges. Wien*, **15** : 256.
Brauer, 1866, *Novara Reise, Neuropt.*, : 14–15.
Notanatolica brasiliana Ulmer, 1905, *Ann. nat. Hist. Hofmus., Wien*, **20** : 72, fig. 33.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–34.
Ulmer, 1907, *Gen. Insect.*, **60a** : 131.
Ulmer, 1913, *Deuts. ent. Z.*, **1913** : 402, 409.

Head dark fuscous with cream-coloured hairs; oculi, dark reddish-brown, antennae, basal joint large and rounded, ochraceous covered with cream-coloured hairs, remaining joints dark fuscous with white annulations, palpi and legs fuscous clothed with cream-coloured hairs, anterior legs darker than the others, spurs 0, 2, 2; anterior wing light chocolate with rather darker coloured, short pubescence, uniform in colour excepting on the post-costal region where there are some golden hairs extending from the base of the wing, culminating in a triangular blotch between the arculus and the base of fork 5; posterior wing much the same colour as the anterior but with less pubescence.

This description is based upon a specimen in perfect condition taken by Dr. Zerny (Vienna Museum) at Rio de Janeiro in 1927. The following description of the ♂ genitalia is from the type.

Genitalia, ♂. Margin of the ninth dorsal segment produced at its centre in a small triangle on each side of which are the superior appendages which are short and slightly

sinuous; upper penis-cover very long, broad at the base, gradually tapering to a truncate apex which bears at the centre of its margin two short, widely divergent processes and minute projections at the outer angles; penis shorter than its cover with a truncate apex; inferior appendages two-branched, main branch from the side broad at the base with a nearly right-angled excision on its lower margin in which is set a small broad second branch with an



FIGS. 96–98.—*Atanatolica brasiliana* Brauer ♂; 96. genitalia lateral, 97. dorsal, 98. ventral.

inturned claw-like apex; beyond the excision, the joint narrows, subsequently dilating and narrowing slightly at the apex; lower margin serrate and set with strong spines; from beneath, the bases of the appendages are very broad and convex as far as the excision, which gives a false jointed appearance to the main branch, the supposed first joint having a wide sinuous apex, the claw-like second branch appearing at about the centre, the inner angle slightly produced, the supposed second joint dilated at its centre with narrow base and apex; ventral margin of the ninth segment cleft slightly at its centre.

Length of anterior wing, ♂, 10 mm.

Type ♂ and paratype ♂ in the Vienna Museum, the type mounted in balsam with one pair of wings mounted dry.

I am unacquainted with the following species :—

Triplectides aliena McLachlan.

Leptocerus (?) *alienus* McLach., 1868, *J. linn. Soc. Lond.* (Zool.), **10** : 202.
Notanatolica aliena Ulm., 1907, *Gen. Insect.*, **60a** : 131.

Described from a female type. McLachlan states that in the anterior wing, neuration agrees with *Leptocerus*, but that the posterior wing is somewhat aberrant. Location of the type not stated.

Triplectides (?) *nivosa* Navás.

Notanatolica nivosa Navás, 1924, *Konowia*, **3** : 208–9.

Habitat.—Inseln Luisiana : Mt. Riu, 2000 ft., Sudest Isl., iv.1916 (*Eichorn Bros.*).
Type ♂ in the collection of the Rev. L. Navás.
No figures are given with the description.

Triplectides (?) *zonata* Navás.

Notanatolica zonata Navás, 1924, *Konowia*, **3** : 209.

Habitat, as stated in the description, as follows :—
" Oceanie. Hydrographer Alt. Brit. N.G., 2500 ft., March 1918 (Eichorn Bros.)."
Type ♂ in the collection of the Rev. L. Navás.
No figures are given with the description.

Triplectides (?) *media* Navás.

Notanatolica media Navás, 1931, *Musée Heude, Shanghai*, **7** : 9.
Navás, 1931, *Lingnan Sci. J.*, **10** : 530.

China : Cho-gahn, 1924.
Type ♀ in the collection of the Rev. L. Navás.
No figures are given with the description.

Triplectides (?) *australis* Navás.

Triplectides australis Navás, 1934, *Brotéria*, **30** : 93–4.

Australia : Sydney.
Type in the coll. Lüdermann, Museum Berlin-Dahlem.
No figures are given with the description.

Triplectides (?) *manilana* Navás.

Notanatolica manilana Navás, 1920, *Mem. Pont. Accad. n. Linc.*, (2) **5** : 8.
Ulmer, 1930, *Treubia*, **11** : 403.

Philippine Is. : Manila, 1917.
Type in the collection of the Rev. L. Navás.
No figures are given with the description.

Triplectides (?) *variipennis* Navás.

Notanatolica variipennis Navás, 1927, *Bol. Soc. Iber. Cienc. nat.*, **26** (9) : 74–5.
Ulmer, 1930, *Treubia*, **11** : 403.

Philippine Is. : Montalbán (Luzon), 4.ii.1914.
Type ♂ in the collection of the Rev. L. Navás.
A figure of the apical portion of the anterior wing is given showing the fourth apical cellule to be sessile.

Triplectides (?) *fazi* Navás.

Triplectides fazi Navás, 1932, *Brotéria*, **28** : 84–5, fig. 73.

Chile : Bio-Bio, Ruiz Coll., i.1928.
Type ♀ in the Museum Berlin-Dahlem.
The figure of the posterior wing given in the description suggests that the insect belongs to the Odontoceridae rather than the Triplectidinae.

Triplectides monotona Navás.

Triplectides monotona Navás, 1918, *Bol. Soc. Aragon.*, **17** : 225–6.

Chile : Los Perales, Marga-Marga, i.1918.
Type ♂ in the collection of the Rev. L. Navás.

Triplectides (?) *beccarina* Navás.

Notanatolica beccarina Navás, 1933, *Mem. Pont. Accad. n. Linc.*, (2) **17** : 106–7, fig. 95.

Habitat.—Kandari, Beccari, iv.1874.
Type ♂ in the collection of the Geneva Museum.
A figure of the posterior wing accompanies the description.

Triplectides (?) *columbica* Navás.

Triplectides columbica Navás, 1916, *Mem. Pont. Accad. n. Linc.*, (2) **2** : 67–8, fig. 8.

Colombia : Choachi, June 1915.
Whereabouts of the type not stated.
A figure of the wings accompanies the description, but the discoidal cell of the anterior wing is not shaped in accordance with that of the genotype *gracilis* which the species is said to resemble.

Triplectides jaffueli Navás.

Triplectides jaffueli Navás, 1918, *Mem. Pont. Accad. n. Linc.*, (2) **4** : 9–10, fig. 14.
Navás, 1924, *Est. Rev. Ac. Lit. Plata*, **1922** : 567.
Navás, 1926, *Rev. Chilena Hist. nat.*, **30** : 335.
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Navás, 1933, *Rev. Chilena Hist. nat.*, **37** : 234.

Chile : Marga-Marga, 1916 (type).
Type ♂ in the collection of the Rev. L. Navás.
Figures of the wings and genitalia dorsal are given with the description.

Triplectides (?) *grisea* Banks.

Notanatolica grisea Banks, 1924, *Bull. Mus. comp. Zool. Harvard*, **65** : 447–8, pl. 3, fig. 38, pl. 4, fig. 60.
Ulmer, 1930, *Treubia*, **11** : 403.

Philippine Is. : Mt. Maquiling, Los Banos, Surigao, Mindanao.
Type in the collection of the Museum of Zoology, Harvard, Mass.

Triplectides vivipara Wood-Mason.

Notanatolica vivipara Wood-Mason, 1890, *Ann. Mag. nat. Hist.*, (6) **6** : 139–141, figs. *a–b*.
Ulmer, 1906, *Notes Leyden Mus.*, **28** : 31–34.
Ulmer, 1907, *Gen. Insect.*, **60a** : 130.

Figures of the wings and maxillary palpi of this insect, a ♀, are given, suggesting that the species may be an example of *magna*.

Symphitoneuria (?) *fulva* Navás.

Symphitoneuria fulva Navás, 1932, *Brotéria*, **28** : 153–4, fig. 86.

N. Guinea : Hatam, iv.1875, Beuari; Moroca, 1300 m., vii.–ix.1893 (*Loria*).
Type ♂ in the Genoa Museum collection.

A figure of the anterior wing (♂) is given which indicates that the species is not a *Symphitoneuria*. It is more closely akin to *Triplectidina* erected in this paper, but it is probable that a new genus is required, if the neuration shown is not aberrant.

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Index.

aliena, Triplectides, 125.
amabilis, Hudsonema, 111.
Atanatolica, 92, 123.
Atriplectides, 92, 119.
australis, Triplectides, 125.
beccarina, Triplectides, 126.
brasiliana, Atanatolica, 123.
brasilianus, Mystacides, 123.
canescens, Leptocerus, 100.
cephalotes, Triplectides, 94, 104.
ceylanicum, Triplectides, 93, 103.
cognata, Notanatolica, 100.
cognatus, Leptocerus, 100.
columbica, Triplectides, 126.
delicatula, Notalina, 115.
discolor, Hudsonema, 114.
dubia, Atriplectides, 120.
exigua, Symphitoneuria, 117.
fazi, Triplectides, 126.
filosus, Leptocerus, 117.
flaminii, Hudsonema, 111.
flava, Notalina, 117.
flaveola, Leptocellodes, 107.
fulva, Symphitoneuria, 127.
gilolensis, Triplectides, 94, 104.
gracilis, Triplectides, 93, 96
grisea, Triplectides, 127.
Hudsonema, 92, 110.
jaffueli, Triplectides, 126.
latipennis, Triplectides, 93, 98.
legendrina, Notanatolica, 100, 103.
Leptocellodes, 107.
loboptera, Triplectides, 117.
Loticana, 92, 121.
luzonensis, Notanatolica, 105, 107.
magna, Triplectides, 93, 100.
magnus, Leptocerus, 100.
manilana, Triplectides, 125.
media, Triplectides, 125.
monotona, Triplectides, 126.
nigricornis, Triplectidina, 109.
nigripennis, Triplectides, 93, 97.
nivosa, Triplectides, 125.
Notalina, 92, 114.
Notanatolica, 93.
obsoleta, Triplectides, 93, 94.
obsoletum, Pseudonema, 94.
opposita, Loticana, 121.
opposita, Notanatolica, 105, 121.
oppositus, Leptocerus, 121.
oreolimnetes, Triplectidina, 108.
parkeri, Notalina, 114.
poujadei, Notanatolica, 107.
princeps, Mystacides, 96.
Pseudonema, 92.
sarthropus, Tetracentron, 94.
Symphitoneuria, 92, 117.
Tetracentron, 92, 94.
Triplectides, 92.
Triplectidina, 92, 107.
variipennis, Triplectides, 126.
vivipara, Triplectides, 127.
zonata, Triplectides, 125.